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ABSTRACT

This research bulletin includes reports of research in progress or recently completed from September 1971 through February 1972. Each entry includes information concerning the investigator, purpose, subjects, methods, duration, cooperating groups, and findings (if available). The reports are listed under several topical headings: (1) Long-Term Research, (2) Growth and Development, (3) Special Groups of Children, (4) The Child in the Family, (5) Socioeconomic and Cultural Factors, (6) Educational Factors and Services, (7) Social Services, and (8) Health Services. In addition to the reports on research, an extensive review paper entitled "The Vocal Behavior of Infants" is included. The paper presents a discussion of research methodology and data gathering strategies related to the descriptive characteristics of infant vocalizations, the learning theory approach to vocal behavior, conditioned vocal responses, conditioned response differentiation, reinforcer effectiveness, age and conditionality, and mother-infant interaction patterns. (SDH)

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RESEARCH RELATING TO CHILDREN

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Bulletin 29

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ERIC Clearinghouse on Early Childhood Education

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NOTES: *Research Relating to Children* is prepared by the ERIC Clearinghouse on Early Childhood Education under the direction of Lilian G. Katz, Ph.D. Investigators who wish to submit abstracts of their research projects should address correspondence to:

Research Relating to Children
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PREFACE

Research Relating to Children, Bulletin 29 includes reports of research in progress or recently completed research. With the exception of Long-term Research, it does not repeat studies included in *Bulletins 3* through *28*, even though they are still in progress. This issue, therefore, does not reflect all research relating to children, but only research reported to us from September 1971 through February 1972.

In addition to reports of research in progress, *Bulletin 29* includes an extensive review paper. This review, entitled *The Vocal Behavior of Infants*, was prepared by Craig T. Ramey, Ph.D. and Leslie Hieger, B.A. at Wayne State University. The paper presents research methodology and data gathering and topics including descriptive characteristics of infant vocalizations, the learning theory approach to vocal behavior, conditioned vocal responses, conditioned response differentiation, reinforcer effectiveness, age and conditionability, and mother-infant interaction patterns.

Craig T. Ramey, Ph.D., principal author of the paper, is presently Associate Professor, Department of Psychology, University of North Carolina; and Senior Research Investigator for Infant Development, Frank Porter Graham Child Development Center, University of North Carolina, 625 West Cameron Avenue, Chapel Hill, North Carolina 27514. We are grateful to Dr. Ramey and his associate for making their work available for inclusion in *Research Relating to Children*.

Publication references and plans are cited in the abstracts of research in the bulletin. The Clearinghouse, however, does not maintain information on the publications of these investigators. If you wish to obtain further details about any of the projects, please check professional journals in the appropriate field, or write directly to the investigator.

We wish to thank investigators who have submitted reports of their research, and those who have informed us of other studies. We wish to acknowledge the valuable assistance of the Science Information Exchange and the foundations which provide us with information about their research grants.

Lilian G. Katz, Ph.D.
Director
ERIC Clearinghouse on Early Childhood Education

To Research Investigators:

This publication is only as complete as you are willing to make it. On page 147 you will find a form for reporting your current research. On page 151 you will find a form to let us know of other investigators who are working in the field. Please let us hear from you.

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THE VOCAL BEHAVIOR OF INFANTS

Craig T. Ramey and Leslie Hieger

Wayne State University

INTRODUCTION

Theorists of speech acquisition have paid scant attention to the *function* of the child's vocal behavior before the time that he can utter recognizable words. Yet it is during the period of prelinguistic vocal behavior that the conditions which affect the onset and continuation of speech development might be most readily observed. Although a substantial body of research (which will be summarized later in this paper) exists concerning the phonemic development of the infant's speech sounds, the work is primarily of a descriptive nature rather than of an explanatory one. More effort has been expended trying to classify and codify speech products than has been expended in trying to determine the factors that tend to enhance or retard vocal production.

One question often asked by psychologists and parents alike is, what is the relationship between early vocal output and later vocal production? Unfortunately we have extremely little information with which to anwer this question, and what information does exist seems to indicate no relationship (Winitz and Irwin, 1958 a). The types of measures which have been chosen to examine the relationship, however, have been very limited with respect to those potentially usable.

Several studies (Kareltz, Fisichelli, Costa, Karelitz, and Rosenfield, 1964;Cameron,Livson, Bayley, 1967; and Spiker and Irwin, 1949) have related early vocal production to later *intellectual* development with somewhat mixed results. In general, a small positive relationship seems to exist between the two and perhaps a stronger relationship exists for females than for males. The actual tracing of the processes or mechanisms that account for such correlations remains unaccomplished.

RESEARCH METHODOLOGY AND DATA GATHERING STRATEGIES

Methods of investigating infant vocalizations fall generally into the classes of *observation* and *experimentation*. These two broad categories, of course, are common to all types of scientific research, and many of the more specific aspects of the methodology involved in studying infant vocal behavior (for example, research design) are not peculiar to this phase of psychology alone. Likewise, most of the problems involved in studying any aspect of infant behavior apply to vocalization as well. It is primarily techniques of data gathering, and to some extent data analysis, that differentiates the study of infant vocalization from many other areas of psychological research.

Parental observation and recording of infant speech development were probably the earliest methodological techniques employed in the history of infant vocalization research. Whereas such studies were longitudinal, most were based on small numbers of children and doubts can be raised about the generality of results (Rebelsky *et al.*, 1967).

A number of observational studies have been performed more recently using nonparental observers (Brodbeck and Irwin, 1946; Fisichelli *et al.*, 1961; Irwin, 1947 a; 1948; Irwin and Chen, 1946 b; Winitz, 1961). Most typically, the Fairbanks (1940) abbreviated International

Phonetic Alphabet has been employed in these studies, as well as in some of the parent-observer research, as a means to identify and record infant speech sounds scientifically. This alphabet consists of a set of symbols, each of which represents an elemental speech sound.

Speech sounds may initially be collected by magnetic tape recording equipment or transcribed by a trained listener as they are emitted by the infant. Regardless of the data collection technique, observer reliability, which refers in these cases to the percentage of agreement between two or more listeners trained in the identification of speech sounds according to the International Phonetic Alphabet, has been found to be acceptably high. Reliability studies have been reported by Irwin and his associates (Irwin, 1945; McCurry and Irwin, 1953) in which live transcriptions were used. Irwin (1956) has also performed reliability studies using the magnetic tape recorder. In general, observer reliability has been found to range around 90 percent agreement.

The sound spectrograph, developed by Bell Telephone Laboratories, is a device used to convert auditory signals into visual records. The instrument measures the duration, frequency, and intensity of sounds; resulting data are plotted graphically with frequency on the vertical axis and duration on the horizontal. Sound intensity is indicated by darkness of the marking(Irwin, 1961). It must be emphasized that the sound spectrograph yields only acoustic measures, and therefore, the instrument is most useful when employed with listeners trained in phonetics or psycholinguistics.

Winitz (1960) (an associate of Irwin) and Lynip (1951) have employed the sound spectrograph to investigate infant vocalizations. Lynip criticized previous research that employed observers trained in phonetic transcription on the grounds that the methods they used involved excessive reliance upon human observation and were therefore unnecessarily vulnerable to error. Furthermore, he maintained that since spectrographic analysis of infant and adult vowels indicates little similarity between them, phonemes (which are units of adult speech) cannot appropriately be applied to the analysis of infant speech sounds. Winitz counters that there are spectrographic differences among the speech sounds of infants, children, men, and women that reflect differences primarily in the respective size of mouth cavity. Despite acoustical differences from adult speech, a high reliability of specific vowel sounds emitted by infants were agreed upon by seven trained judges.

An important aspect of the analysis of infant speech sounds is the use of appropriate techniques and indices. Measures of phoneme type and consonant-vowel ratios (Irwin and Chen, 1946a) and phoneme frequency (Irwin, 1947 a) have been employed where appropriate. The differential percentage index, which is based on differences between the relative frequency of a phoneme in infant and adult speech, can be used to show the stage of development of an infant's speech in terms of the adult (Chen and Irwin, 1946 a). The type-token ratio (TTR) (Chen and Irwin, 1946 b) indicates the relation between the number of different categories of phonemes (type) to the total number of speech sounds (token) in a sample. This TTR has been found to increase with age of the infant and decrease with size of the token. Three-dimensional graphs based on the age of infant subject, size of token, and TTR can be used for prediction and interpolation of the TTR.

The use of medians and percentiles for diagnosis of speech sound development and retardation with respect to phoneme frequency has been advocated by Irwin (1947 c), because frequency distributions of phoneme frequency have not usually been found to be normal.

Age trends in vocalization behavior can be studied using either *cross-sectional* or *longitudinal* methods. The cross-sectional approach involves the use of a separate sample of subjects at each age level studied; whereas, in longitudinal research the same subjects are employed at every age level sampled. Essentially, the advantages and disadvantages inherent in these two methods apply to research in infant vocal behavior just as they do to other areas of developmental research. While individual trends cannot be followed with cross-sectional designs, time involved in data gathering is greatly reduced over longitudinal procedures. In addition, loss of subjects over time is frequently a problem of longitudinal designs.

The cross-sectional approach is illustrated by Brodbeck and Irwin's 1946 paper (to be discussed in detail later) concerning the phonetic development of orphanage infants at three age levels. On the other hand, Winitz (1961) investigated repetitions in the speech of children under age 2 in a study that appears to be longitudinal in nature.

The Brodbeck and Irwin research, concerning speech sound development, also serves as an example of the control group technique. This method basically involves the comparison of one or more *special* groups of subjects with a control group(s) along a certain dimension. The special group consisted of orphanage infants, while the control group consisted of infants from normal homes.

Experimental intervention, as aresearch method in the study of infant vocal behavior, has not been as widely emphasized as observation primarily because suitable methodological techniques have not been available. The infant is a notoriously difficult subject to work with using any research technique. The added demands for precision involved in a carefully controlled experimental design have resulted in the fact that, until recently, such designs were seldom successfully applied to young infants.

The earliest research reported in the vocalization literature that involves experimental intervention are studies that attempted to affect language competence or learning by increasing verbal stimulation. A representative technique employed was to enrich the language environment of an experimental subject by increasing the amount of verbal interaction or stimulation. Stimulation was accomplished, perhaps, by reading stories to the child, while minimizing such contact with a control child (Rebelsky *et al*., 1967).

Studies that employ conditioning as a means of affecting type or quantity of vocal output by infants have relied exclusively upon operant techniques. Dependent measures have most frequently been presented in terms of vocal responses per unit time (Ramey and Ourth, 1971; Rheingold *et al*., 1959; Weisberg, 1963), whether the intention of the experimenter was to attempt to condition quantity or quality (Routh, 1969) of vocalizations. Reinforcement in such studies can be broadly classified as either social or nonsocial in nature. Conditioning has been somewhat more successful when social reinforcers (such as smiles and verbal responses by adults to infant vocalizations) have been employed (Rheingold *et al*., 1959; Todd and Palmer, 1968; Weisberg, 1963). More recently, however, a variety of nonsocial stimuli; for example, colored geometric figures (Ramey *et al*., 1971) and a mild tactile stimulation of the infant s palm (Sheppard, 1969), have been found to be effective reinforcers.

Descriptive Characteristics of Infant Vocalizations

Much of the research done on the specific descriptive characteristics of infant vocalizations is based on a body of data gathered by Irwin and his associates (Brodbeck and Irwin, 1946; Chen and Irwin, 1946 a; Irwin, 1947 a, 1947 c, 1948 Irwin and Chen, 1946 b; Winitz, 1960, 1961; Winitz and Irwin, 1958 a, 1958 b). The subjects used in most of the studies reported were 95 white, normal infants from middle class homes in Iowa City. The sample was approximately equal with respect to sex and family constellation. As many as possible of the infants were followed continuously from birth to 2 1/2 years, although fewer subjects were available at the older age levels.

Data were collected by recording the spontaneous speech sounds of the infants and transcribing them using the abbreviated International Phonetic Alphabet (Fairbanks, 1940). A sampling unit consisted of the sounds made by an infant on 30 breath exhalations (not necessarily consecutive), and were limited to noncrying vocalizations. This method was found to have high observer reliability (Irwin, 1945).

Analyzing this data, Irwin (1947 a) found that, for the first year and a half of infancy, the rate of frequency of speech sound development was constant and then increased over the last year of infancy. The rate of acquisition of phoneme types, however, was one of decelerating increase; i.e., a parabolic curve. There were no significant sex differences. Winitz and Irwin (1958 a) reported that infants did not maintain their relative position in the group over time with respect to either phoneme frequency or type. It was concluded that measures of an infant's amount of vocalization and the number of different sound types he can produce at a given age cannot be used to predict either later speech sound status or intelligence in early childhood.

The syllabic and phonetic structure of the early words of infants between ages 13 and 18 months were also studied by Winitz and Irwin (1958 b). This particular age range was chosen from the total Iowa data because infants are said to utter their first words at this time (McCarthy, 1954). Results indicated that the first words of infants tend to be almost exclusively monosyllabic or dissyllabic. In the second year, labial consonants are most frequently used. This is in contrast to the earlier months of infancy, during which back consonants are the most frequently uttered and labials appear rarely (Irwin, 1947 b). About 95 percent of infants' words were found to be composed of both vowels and consonants.

Winitz (1961) determined that from 1/4 to 1/3 of breath exhalations during the first 2 years of life contain repetitions of speech sounds or sound patterns. The tendency of repetition peaks at the end of the first year and thereafter decreases until the end of the second year. These results may be partially explained by the fact that infants learn more words and sounds during their second year, and hence, may be less apt to repeat a given sound on a single breath. At any rate, the results clearly indicate that repetition of sounds begins well before conventional language is acquired, a finding which may be relevant to stuttering research.

Roe (1968), in a longitudinal study (that did not employ the Iowa data) of male infants between ages 3 and 15 months, found that infants vocalize 20 percent of their waking time. More than half of this vocalization consists of babbling, which peaks at 6 and again at 11 months of age. Individual subject's peaks of babbling correlated with age of crawling, overall rating on the Gesell Scale, and number of meaningful words used at 15 months.

In an effort to define some of the variables relevant to speech sound development, Irwin (1948) sutdied the effect of family occupational status and age of the infant on use of sound types (phonemes). The Iowa subjects were divided into two groups based on fathers' occupations. One group of fathers were either skilled or unskilled laborers, while the second group consisted of clerical, business, or professional men. It was found that the mean number of sound types used increased with age for both groups. During the last year of infancy, the mean of the higher socioeconomic status babies was significantly greater than that of the lower status infants.

Brodbeck and Irwin (1946) studied the speech behavior of infants without families in comparison to that of the normal Iowa group. Subjects in both groups were of the ages from birth to 6 months. Means for the orphanage group were below the means of the family-reared infants at all age levels for all sound type and sound frequency measures. Furthermore, on many of the measures, the developmental curves of the orphans tended to flatten out; whereas, the normal group's curves continued to increase. These results could not be attributed to social class differences; when the family group of subjects was subdivided into high and low socioeconomic status groups, the means obtained by the orphanage subjects were several times below either of the normal groups' means. These differences were attributed to the varying amounts of individual attention given the groups.

Along a somewhat different vein, Eimos *et al*. (1971) found that both 1- and 4-month-old infants could discriminate acoustic cues underlying adult phonemic distinctions. Interestingly enough, a tendency was found towards categorical perception. That is, *Ss* could discriminate better across phonemic category than within. An operant conditioning paradigm was used, that employed synthetic speech sounds as auditory stimuli with sucking behavior as the dependent measure. Discrimination was assumed to have occurred if, following habituation to one sound, an increase in sucking, relative to a control group's behavior, was noted to a second sound. Infants, then, are able to sort acoustic variations of adult phonemes into categories with limited exposure to these sounds, with no practice using them, and with no prior differential reinforcement. The implication is that perception of speech in a linguistic mode may be part of the biological makeup of the organism.

Selective *suppression* of infants' vocal responses by classes of phoneme stimulation was studied in 1969 by Webster. Using each 6-month-old male *S* as his own control, he found that during vocal stimulation the total number of sounds produced by the infant decreased from baseline measurements. Following stimulation by consonants, the vowel-consonant ratio produced by the *S* increased due to a decrease in production of consonants. The reverse was true when the infant was stimulated with vowels. In summary, stimulation with restricted classes of sounds lowered the proportion of sounds of that category subsequently produced by the infant.

It was hypothesized that sounds that have recently become distinctive to an infant by virtue of having been frequently present in his environment may develop reinforcing characteristics. (Consequently, it might be expected that, following a brief period of time during which the distinctive sound class was produced by the infant with a frequency relatively lower than that of nondistinctive sounds, there would be an increase in the frequency of the use of sounds like those with which the infant would be stimulated at some later time in his development.)

Learning Theory Approach to Vocal Behavior

An increasingly influential approach to early speech development has grown out of the ideas that Skinner (1957) advanced in *Verbal Behavior*. Chomsky (1959) in his very influential review of that book severely criticized Skinner's position that verbal behavior could be analyzed within an operant conditioning framework, using such concepts as reinforcement, stimulus control, response differentiation, etc. Whereas Chomsky acknowledged that the insights that had been gained in laboratory experimentation withinfra-humans were quite "genuine," he added that they "can be applied to complex human behavior only in the most gross and superficial way, and that speculative attempts to discuss linguistic behavior in these terms alone omit from consideration factors of fundamental importance . . ." (p. 28). Chomsky concluded the paragraph containing the above quotation by commenting on the fruits of the book's efforts. He asserted that "The magnitude of the failure of this attempt to account for verbal behavior serves as a kind of measure of the importance of the factors omitted from consideration, and an indication of how little is really known about this remarkably complex phenomenon." It appears that the line of attack which Chomsky has chosen to make is, at least in part, somewhat misdirected. His argument in essence is that the system that Skinner proposes is too simplistic to account for the intricacies of human speech. What Chomsky apparently fails to realize is that *Verbal Behavior* is in the main a statement of a thesis. The thesis must stand or fall on the basis of the evidence that is generated by it. As MacCorquodale (1970) pointed out, "Although his thesis is empirical, Skinner's book has no experimental data involving the laboratory manipulation of verbal responses which definitely demonstrate that the processes he invokes to explain verbal behavior are in fact involved in its production. . ." (p. 84). Whether or not Skinner's method of approach to verbal behavior is potentially useful in accounting for the full range of adult speech is still an unanswered empirical question and is, in any event, beyond the scope of the present review. Skinner (19[illegible]7) did assert, however, that, "The process of 'operant conditioning' is most conspicuous when verbal behavior is first acquired" (p. 29), and it is to that period that we shall confine ourselves.

Conditioned Vocal Responses

In almost 15 years since the publication of *Verbal Behavior* there has been an ever-increasing amount of research on vocal behavior of infants using operant methodology.

The first successful attempt to increase vocal output using operant techniques was reported by Rheingold, Gewirtz, and Ross (1959). Using 21 institutionalized infants with median age of 3 months, those investigations reinforced discrete voiced sounds other than "straining sounds and coughs, and the whistles, squeaks, and snorts of noisy breathing." Although the reinforcement was consistent and unvarying, it did not differ from what any mother might do when her baby vocalizes. That is, the experimenter simultaneously smiled, touched, and vocalized back to the child when the child vocalized. Each day the children were to have three 9-minute sessions, with 2 days each devoted to baseline, conditioning, and extinction. (In this study, as in others reported in this paper, response rate will be converted to responses per minute (RPM) when feasible in order to provide maximum comparability across experiments.) With this procedure, response rate rose from initial baseline measures (*E* present but unresponsive to the infant) of slightly less than five responses per minute to slightly more than eight responses per minute and dropped to about five responses per minute during extinction. As the authors pointed out, however, the demonstration that the alleged reinforcing stimulus had led to operant conditioning had not been completely accomplished. It is possible that it was not the contingent relationship between the vocal response and the social reinforcement that caused the response rate increase but, rather, that the alleged reinforcing stimulus was, in whole or in part, a releasing stimulus for the response in question.

In an attempt to address himself to this last question, Weisberg (1963) using *S*s from the same institutionalized population as Rheingold, *et al.* (1959), conducted an experiment that was performed over 8 experimental days. Two experimental sessions ranging from 6 to 10 minutes per day were held for each *S*. Days 1-4 were devoted to baseline measures with no *E* present on days 1 and 2, and *E* present but unresponsive on days 3 and 4. On days 5 and 6 the following six experimental conditions were formed:

1. No *E* present
2. *E* present but unresponsive
3. Contingent Social Stimulation (similar to Rheingold, Gewirtz, and Ross' and lasting approximately 2 seconds)
4. Noncontingent Social Stimulation (delivered at the rate of four per minute)
5. Contingent Nonsocial Stimulation (a door chime was sounded after each vocalization)
6. Noncontingent Nonsocial Stimulation (door chime sounded four times per minute)

Experimental days 7 and 8 were essentially extinction days with *E* present except for the two Noncontingent groups that were continued as such.

Analysis of the results suggested that only the Contingent Social Stimulation group was significantly affected during conditioning. The response rate increased from approximately 1 RPM to slightly less than 3 RPM and declined to approximately 2 RPM during the extinction days. Except for a minor and nonselective increase from baseline day 1 to baseline day 2, no other comparisons were statistically significant. Thus, whereas there are large response rate differences between those found in Weisberg's study and those reported by Rheingold *et al.*, the general trend of Weisberg's data tends to support the notion that contingent social stimulation acts as a positive reinforcer for vocalization rather than as a releaser for that behavior. Further, the mere presence of an unresponsive male stranger does not appear to affect vocalization rates.

Casler (1965) has provided supporting evidence for lack of change in response-frequency due to the presence of a noncontingently responding male stranger. He used institutionalized children between 6 and 66 weeks of age.

However, while the mere presence of an unresponsive or noncontingently responding male stranger may not affect vocalization rates of infants, his presence may serve to increase the effectiveness of other reinforcers. Todd and Palmer (1968), using institutionalized infants between 75 and 100 days of age, attempted to condition two groups of eight infants each using 5-second tape recordings of an adult female voice which began 1.5 seconds after vocal termination. In one of the two experimental conditions *E* was present (EP) while the reinforcing stimulus was presented and in the other condition he was never present (NEP). Each *S* was given six separate 10-minute sessions each for baseline (NEP), conditioning (NEP vs EP), and extinction (NEP). The NEP group showed a significant increase from mean baseline frequency (approximately .5 RPM) to asymptotic conditioning frequency (approximately 1.7 RPM). The corresponding figures for the EP group are approximately .5 RPM and 3.2 RPM respectively. During the extinction sessions the response rates for both groups gradually approached the baseline rate. Although the sparse way in which the results are reported preclude unequivocal judgment, it appears that the frequency of responding during conditioning for the EP group was significantly higher than for the NEP group. This led Todd and Palmer to conclude that whereas "Human presence is not a necessary factor in conditioning infant vocalizations . . . it functions to increase the reinforcing effectiveness of the human voice" (p. 595).

The depressed rates of vocalization that both Weisberg and Todd and Palmer reported, relative to those reported by Rheingold, Gewirtz, and Ross, demand explanation. One possible explanation for this discrepancy has been suggested by Weisberg. In comparing his experiment to that done by Rheingold *et al.* he observed that, whereas the latter investigators had worked with their *S*s in the infants' own cribs, he had used an experimental room. From Todd and Palmer's description of their procedure it appears that they also used a novel setting (an experimental crib). It is therefore possible that the relative novelty of these situations produced response inhibition of vocalization.

Another possibility for Todd and Palmer's rate reduction may be derived from a recently reported experiment by Ramey and Ourth (1971) concerning the effects of delayed social reinforcement. Using 15 normal home reared infants at each of three age levels (3, 6, and 9 months), they demonstrated that when reinforcement was delayed by as little as 3 seconds, conditioning did not occur for any of the age groups used. However, when reinforcement was delivered by *E* (in a novel experimental situation in the presence of the infant's unresponsive mother), mean response rate increased from approximately 2 RPM during baseline to an asymptote of approximately 7 RPM during conditioning and declined to approximately 2 RPM during extinction within a single 9-minute conditioning session. Thus, Todd and Palmer's relative rate reduction which was gathered using a 1.5 second delay might conceivably be due, at least in part, to the negative effects of delayed reinforcement.

Conditioned Response Differentiation

The attempts to condition infant vocalizations that have been mentioned so far have all concerned themselves with nonselectively increasing the frequency of emission of all vocal sounds other than crying, fussing, coughing, hiccoughing, or other such sounds that typically are not considered part of babbling. One of the major tenets of the learning theory approach to vocal behavior, however, is that the vocal repertoire of early childhood speech can be partly accounted for by selective reinforcement of a subset of all the vocal sounds that an infant can make (see Miller and Dollard (1941), Mowrer (1950), and Skinner (1957). (It should be noted that, whereas there appears to be a general, and probably well-founded, assumption among psychologists that there are no significant differences in the initial vocal repertoires of young infants in different cultures, these authors have been unable to find any good empirical evidence to support this very claim. Given the importance of such an assumption, more good cross-cultural psycholinguistic research seems to be in order.) Routh (1969) has, however, provided some *experimental* evidence to suggest that the frequency of utterance of vowels and consonants can be selectively-affected by differential reinforcement for infants between 2 and 7 months of age. In this carefully conducted experiment using 23 home reared infants and 7 institutionalized babies, he maintained three experimental groups which included the following conditions: (1) reinforcement of all discrete vocalizations, (2) reinforcement of consonants only, and (3) reinforcement of vowels only. The reinforcement was the same as that used by Rheingold *et al*. and consisted of a smile, three "tsk" sounds, and simultaneous pressure on the infant's abdomen. Experimenter-observer reliabilities during conditioning were reported as .97 for vocalization, .81 for consonants, and .95 for vowels. Although there was a general increase in the frequency of both vowels and consonants under all experimental conditions, there was a proportionally greater increase of vowels in the vowel-only reinforcement condition, and a greater proportional increase of consonants in the consonant-only reinforcement condition. This led Routh to conclude that, "it appears that not only the total rate of vocal production but also the qualitatively specific components of infant vocalizations may be modified by conditioning procedures" (p. 225).

With respect to Routh's data several findings seem particularly interesting. First, although it is somewhat difficult to precisely determine from the presentation of results what the overall mean RPM for vocalization was for each of the three groups, it appears that the asymptotic conditioning rates are quite significantly above those reported by Weisberg (1963) and Todd and Palmer (1968) and similar to those reported by Rheingold *et al*. (1959) and Ramey and Ourth (1971). At least two possible explanations for Routh's high response rates relative to Weisberg's and Todd and Palmer's are suggested. (1) Routh used mainly home reared infants who may differ somewhat in vocalization rates from institutionalized children (see, for example, Brodbeck and Irwin, 1946, Goldfarb, 1943; and Dennis and Najarian, 1957 for supporting information). (2) From a footnote in Routh's paper it appears that the home reared children were conditioned in their own homes, which may have reduced the probability or magnitude of vocal response inhibition due to a completely new experimental situation such as that used by Weisberg and Todd and Palmer.

The second point to be emphasized is the overall increase in all vocalizations in the two groups in which only a subclass of all vocalizations was reinforced. Routh explains this general increase using the principle of response generalization. Recently Ramey, Hieger, and Klisz (1971) have reported an analogous finding with maternally deprived infants who were vocally retarded. In this latter experiment there was an apparent increase in intensity and complexity of vocalization even though any nonfussy vocal response of minimal intensity was sufficient for reinforcement to be delivered.

Reinforcer Effectiveness

Schwartz, Rosenberg, and Brackbill (1970) currently have the only published experimental evidence concerning comparative reinforcer effectiveness for vocalizations in infancy. They attempted to analyze the relative effectiveness of the components of the social reinforcement that has been most frequently used (i.e., reinforcement patterned after that used by Rheingold *et al.* 1959). The components of the social reinforcement are (1) visual stimulation, (2) tactile stimulation, and (3) auditory stimulation. The visual reinforcement consisted of the experimenter's smiling and nodding his head; the tactile reinforcement consisted of the experimenter's rubbing the infant's abdomen with the palm of his hand; and the auditory reinforcement consisted of a 1-second tape recording of a female's voice saying, "nice baby."

Two experiments were conducted with one using 16 institutionalized infants and the other using 12 institutionalized infants. The first experiment had four experimental conditions, three of them consisted of the three pair-wise combinations of the separate components. The fourth condition was similar to that used by Rheingold *et al.* (1959) and consisted of all three components presented simultaneously. The second experiment focused on single component reinforcers.

Conventional baseline, conditioning, and extinction procedures were used in both experiments with two 20-minute sessions devoted to baseline. The criterion for conditioning was somewhat different from that used in previous experiments and warrants comment. An infant was judged to have been conditioned when he "had achieved a vocalization rate at least 2.5 times that of his baseline rate and had sustained it for 5 consecutive minutes or until three consecutive 20-minute sessions (60 minutes) had passed without the infant's reaching this criterion. Each *S*'s score was the number of minutes taken to reach criterion" (p. 323). Although this type of criterion may prove very useful to investigators using operant techniques, it would be highly desirable to devise a way to assign a probability statement to the likelihood of a given percentage increase over baseline responding. Otherwise one is left with a somewhat arbitrary criterion for conditioning.

Analysis of the results from both experiments indicated that conditioning had occurred in all seven experimental groups, but that there were no significant differences among the groups, which implied that no one of the reinforcing events is more effective than another.

As part of a larger research project, Ramey and Watson (1970) subjected 23 ten-week-old infants and 27 sixteen-week-old infants to operant conditioning procedures designed to investigate the effectiveness of nonsocial reinforcement on male and female infants' vocalizations. All infants were from upper-middle class backgrounds and were home reared. The procedure involved 1 minute of baseline, 4 minutes of conditioning, and 2 minutes of extinction. Infants were reinforced with either a 1-second presentation from a light mounted in the center of a bullseye and a 1-second presentation of a 1000 cps tone simultaneously, or received the light alone. The results indicated no change from baseline for the 10-week-olds under any of the experimental conditions. However, at 16 weeks there was a significant increase in the mean vocalizations from baseline performance to the last minute of conditioning from 3.88 RPM to 6.00 RPM respectively ($t = 2.354$, d.f. $= 26$, $P < .025$). When the results were broken down by sex and type of reinforcement, however, it was observed that the increase was due primarily to the males under the light-only reinforcement condition who increased from a mean of 3.38 RPM during baseline to a mean of 9.20 RPM during conditioning ($t = 6.05$, d.f. $= 4$, $P < .005$). Although the other mean baseline to terminal conditioning scores were in a positive direction, they failed to reach statistical significance. Watson (1969) has reported a similar sex by reinforcement modality interaction using a different operant response (visual fixation), which indicates that boys condition under visual reinforcement but not under auditory reinforcement (1000 cps tone); whereas, girls condition under auditory but not visual reinforcement. Whereas, his finding for males is consistent with the results just presented, the finding for females is not (Ramey and Watson's female infants did not condition under either the light-only or the light-plus-tone). It may be that the light in the light-plus-tone condition was somewhat aversive to the females and served to weaken the overall effectiveness of the compound reinforcer. In any event, the results by Ramey and Watson (1970) and those of Watson (1969) (by extrapolation) appear inconsistent with those reported by Schwartz, Rosenberg, and Brackbill (1970) using social reinforcement and demand further research.

Age and Conditionability

Most of the experiments that are in the conditioning literature have in large part ignored chronological age as a factor in vocal conditioning. Indeed the bulk of the literature seems to have followed the precedent set by Rheingold, Gewirtz, and Ross (1959) and concerns itself with infants who are approximately 3 months of age. There appears to be an assumption that before about 3 months of age the vocal repsonse is primarily under biological-maturational control and that environmental stimuli are of minimal influence.

Perhaps the most influential study that is cited to support the maturational viewpoint was conducted by Lenneberg, Rebelsky, and Nichols (1965). These investigators conducted a longitudinal study from birth to 3 months on 16 subjects. Five boys and one girl were born to deaf parents and three girls and seven boys were born to hearing parents. The specific problem to be addressed was "to what extent are the infant's earliest vocalizations dependent upon properly timed vocalizations (reinforcement)[1] from his parents?" (p. 24). The working assumption appears to be that because deaf parents cannot hear their infant's vocalizations, they are less prone to respond to them vocally. If this is the case, the infants are not likely to have vocalization rates similar to babies of hearing parents unless those rates are controlled primarily by maturational factors rather than by reinforcement.

The basic data for this study were derived from 24-hour tape recordings made in the infants' homes approximately every 2 weeks for a 3-month period. From the tape recordings infant vocalizations were recorded in six categories, three of which (cooing, arhythmic crying, and fussing) were subjected to statistical analysis comparing infants of deaf and of hearing parents. Data were analyzed by dividing each hour into ten 6-minute intervals and determining whether any sounds that were judged to belong in the six categories had occurred within that interval. Frequencies of sounds or durations of sounds were not recorded, and the statistical analysis consisted of comparing the ". . . percentages of *sampling periods*,[2] not percentages of real time" in which categorizable responses occurred. A similar categorization procedure was used for enviornmental sounds. The results indicated no significant differences in vocalizations between the infants of deaf and hearing parents. The environmental sound analysis "brings out a statistically significant difference between the two groups with less amount of speech in the immediate surrounding of babies of deaf parents than of hearing parents" (p.30).

With respect to infant vocalization, Lenneberg *et al*. concluded that:

> Our findings indicate that occurrence of individual cooing responses are not contingent upon specific acoustic stimuli. If they were, babies of deaf mothers, who cannot get the proper reinforcement at the right time because the contiguity between mother's and child's vocalizations is absent or very deficient, should be abnormal in their cooing behavior. On the other hand, our findings can be explained by postulating a readiness to make cooing responses as a function of physical maturation; once the readiness is present the response may be elicited by a variety of stimuli. . . (p. 35).

It appears to the present authors that these conclusions are open to criticism. First, although there is a statistically significant difference between the percentage of intervals in which voices were recorded close to the infants, favoring the infants of hearing parents, this

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[1] Author's paraphrase.

[2] Italics in original.

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relationship is far from indicating that deaf parents never vocalized during proximity to their children. In fact, on three of the seven blocks of experimental days which were plotted (Figure 2 in Lenneberg *et al.*), the percentage data are in favor of the deaf group and on two other blocks there is only a slight difference favoring the hearing group. In any event, because of the way in which the data were analyzed, it is absolutely impossible to speak of contigency relationships between the child's vocalizations and the mother's vocalizations except by the grossest speculations. But even with the significant statistical difference in mind, it is conceivable that although there was a difference in favor of the hearing group, a threshold for contingent vocal stimulation necessary for conditioning to have occurred had been exceeded by the deaf parent group, and that they were simply on a higher variable ratio schedule of reinforcement.

Second, even if it were the case that the children of deaf parents were not receiving as much vocal reinforcement from their mothers, there is a strong possibility that they were receiving other kinds of reinforcement. In the method section of their paper, Lenneberg *et al.* (1965) noted that:

> All deaf families had installed a sound-to-light transducing device in the baby's crib which whould flash a light if the baby's noises exceeded a given (adjustable) threshold. There was considerable variation in the efficacy of this arrangement. In two homes the flashing light (a floor lamp) was lighting up not only the entire bedroom but flashing directly in the baby's face. In another case, red lights would flash in the bedroom, the hall, and in the kitchen. This was the only home in which the device was used as a round-the-clock baby monitor. In the remaining five families, the light was left to flash throughout the day with baby noises, but the arrangement was such that the mother could not see it unless she happened to be looking into the room where the lamp was (p. 25).

From the description of this arrangement it is apparent that the light was contingent upon noises that the child made and could have acted as a reinforcer for his vocalizations. There are several experiments in the literature that suggest that lights can be positive reinforcers for infant vocalizations. The previously discussed experiment by Ramey and Watson (1970) reported such to be the case, but only for 16-week-old males. While there are age differences between the infants used by Lenneberg *et al.* and those of Ramey and Watson, it is also the case that the former's subjects had a much longer exposure to the potential reinforcer which might have aided learning. In addition, it is interesting that Ramey and Watson's experiment conditioning occurred only for males with light alone as reinforcement, and that in the study by Lenneberg *et al.* five of the six infants who belonged to deaf parents were males.

Another experiment which provides evidence that visual reinforcement leads to conditioned vocalizations has been reported by Sheppard (1969), who was successful in maintaining high rates of vocal responding with an infant under 3 months over many experimental sessions using a flashing light and a tape recording of the voice of the child's mother. That Sheppard's reported increase on vocal responding (from a mean of 1.5 RPM during baseline to a mean of 12 RPM during the final conditioning session) was achieved through operant conditioning and not through eliciting properties of the reinforcer was amply demonstrated by establishing "differential responding under discriminative control for both vocal and motor operants. . . ." (p. 48). As Sheppard himself noted the response rates which he reported are not directly comparable to other investigations because all sounds were automatically recorded and reinforced in his experiment and not just voiced sounds.

Finally, the previously mentioned experiment by Ramey, Hieger, and Klisz (1971) provides evidence that light flashes can be used as positive reinforcement; however, their infants were between 7 and 14 months of age. Using a voice-activated relay, which controlled the onset and offset of a visual stimulator, and which when activated showed brightly colored geometric stimuli on a bright white background and a "cry override" switch to preclude reinforcement of fussy vocalizations, they were successful in significantly raising the mean vocalization rates from 3.75 RPM for baseline to 17.52 RPM during conditioning.

All of the studies just mentioned seem to indicate that the voice-to-light transducer in Lenneberg, Rebelsky, and Nichols' study might well have served as a reinforcer for the children of the deaf parents.

In conclusion, the data from Lenneberg, Rebelsky, and Nichols' study fail to demonstrate that the infants of deaf parents receive less contingent *vocal* responding from their parents than do children of hearing parents, and the data further fail to take into account the possibility of the presence of other reinforcers either from the parents or from the transducing device. Therefore, their observation that, "Probably, during the first three months of life, there is a minimum of voluntary control (of vocalization) and a close tie to autonomic functions" is simply unwarranted.

Mother-Infant Interaction Patterns as a Determinant of Vocal Behavior

There is precious little research in the literature that actually deals with mother-infant *interactions*. Much of the research has used mothers' reports as the primary data for analysis, and to a lesser degree, there has been actual observation of both mothers and infants simultaneously. Although there have been several research attempts to deal with the infant's behavior in the presence of the mother (Schaffer and Emerson, 1964; Ainsworth, 1963; Lewis, 1971; Wahler, 1969; Lewis and Wilson, 1971; Lewis and Goldberg, 1969; and Moss, 1967), very little of this research has been able to deal with the notion of reciprocity of mother-infant behavior which is implied in the term *interaction*; investigators continue to search for appropriate statistical or mathematical models to describe ongoing reciprocal behaviors. Further, as Lewis (1971) pointed out, "It is often difficult to determine exactly which one of the pair initiates a behavior sequence and time duration of the sequence."

That mother-infant interaction is an important component of early infant development is a point with which few theorists or researchers would quarrel. Indeed, the reduced opportunity for such stimulation has been explicitly or implicitly implied to account for the developmental retardation of institutionalized babies (Spitz, 1945; Bowlby, 1958; Goldfarb, 1945; Rheingold and Bayley, 1959).

This paper uses the term *mother*-infant interaction as opposed to parent-infant interaction advisedly. Rebelsky and Hanks (1971) have recently published data that seem to indicate that fathers have extremely little vocal interaction with their young infants. Although the study covers only the first 3 months of life, it is quite likely that the trends will eventually be generalizable over much of the first year or two of life. The study gathered fathers' verbal interactions by means of a microphone attached to the infant for a 24-hour period every 2 weeks from the time the infant was 2 weeks old until he was 3 months old. The results indicate that the mean number of interactions per day was 2.7, and the average number of seconds per day of interaction was approximately 30. Although there were large individual differences, even the father with the most interactions spent only about 10 minutes interacting with his child per day. Thus, it would appear that the typical father's role in early vocal development is minimal.

The interaction studies which seem most relevant to the understanding of vocal behavior are those by Moss (1967), Wahler (1969), Lewis and Wilson (1971), and Rheingold and Bayley (1959).

Moss (1967) observed mother-infant interactions in the homes of 30 firstborn children during the first 3 months of life. He was able to show that there was a significant correlation between the frequency of talking that a mother did to her infant at 3 weeks and at 3 months. In addition there was also a significant correlation between the amount of vocalization that an infant engaged in at each of these measurement times. Although one certainly cannot draw any firm cause and effect relationship from these data, it is tempting to hypothesize that infants who vocalize more have mothers who are more responsive. Since these data are not based upon true interactional analyses, however; a number of alternative hypotheses are also possible.

Lewis and Wilson (1971) have provided some data that tend to support this hypothesis and that also raise the possibility that the type of response that a mother makes contingent upon the child's vocalizations may be important. They report that although there is no overall difference in the responsiveness of mothers from various social classes, "the middle SES mother repsonds to her infant's vocalizations with a vocalization, while this is less true for the lower SES mother. It is to be noted that this same behavior is found towards girl versus boy infants, the girls' vocalization resulting in more maternal vocalization than boys'." As Lewis also pointed out, "That girls and middle SES subjects have faster language acquisition may be no coincidence."

Wahler (1969) has conducted an experiment on a single male infant throughout the first year of life. He provided evidence to indicate that the mother's contingent social attention was an effective reinforcement for selectively conditioning subclasses of the infant's vocalizations in a naturalistic setting. Further, vocal responses which did not belong to the class to be reinforced declined in relative frequency.

Finally, Rheingold and Bayley (1959) provided some intriguing information that appears to indicate that the vocal response may be a particularly sensitive response to response-contingent stimulation. They reported a follow-up study of 14 previously institutionalized infants, half of whom received additional care by one of the experimenters between the sixth and eighth month of life. Although no other measure of social responsiveness that the authors used could differentiate the infants who had received the extra care from those who had not, vocal reponsiveness during the home assessments favored the additional care group. Further, it is interesting to note that the experimental group vocalized significantly more than the control group at the end of the initial intervention period also. In light of other writings by Rheingold, it is quite unlikely that the supplementary social stimulation which she provided for the experimental group would have been noncontingent in nature. However, the role of response-contingent stimulation on vocal development is still somewhat speculative and the long-term consequences of enriched response-contingent stimulation on vocal behavior warfurther investigation.

SUMMARY AND CONCLUSIONS

This review has attempted to demonstrate that there now exists a sizeable body of descriptive linguistic data concerning early vocal development. What is needed now is an equally careful examination of the specific factors that tend to retard or to enhance vocal development.

In delineating the factors which affect early speech development, the operant conditioning approach seems to offer a useful framework within which to proceed. This approach can be profitably employed both in the controlled laboratory setting and as an organizational structure for more naturalistic observations.

Finally, there appear to be two areas of research that seem to be particularly in need of increased vigor. First, much more work needs to be done examining the relationship between styles of parent-child interactions and the emergence and development of vocal and linguistic competence. Second, more effort needs to be expended identifying relationships between early vocal behavior and other significant modes of early functioning.

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LONG-TERM RESEARCH

Note: The reports in this section concern
research programs that are continuous.

29-AA-1 LONGITUDINAL STUDY OF CHILD GROWTH AND DEVELOPMENT

Investigator(s): Lester W. Sontag, M.D., Director Emeritus; and Frank Falkner, M.D., Director, Fels Research Institute for the Study of Human Development, Antioch College, 800 Livermore Street, Yellow Springs, Ohio 45387.

Purpose: To study adult personality, adjustment, and aging processes of subjects whose health, growth, personality development, and environment have been studied since birth.

Methods: The program included a study of the aging processes of the subjects' parents in relation to physical and biochemical measures made earlier. It will include studies of parental childrearing practices in the same families for two generations, constancy of autonomic response patterns to stress from childhood to young adulthood, and the relationship of response patterns to psychosomatic disorders in adulthood. Blood lipids in relation to body composition and change in composition will also be studied.

Cooperating group(s): Public Health Service, U. S. Department of Health, Education, and Welfare.

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29-AA-2 LONGITUDINAL CROSS-CULTURAL STUDY OF HUMAN DEVELOPMENT

Investigator(s): Harben Boutourline Young, M.D., Research Associate, Human Growth and Development, School of Public Health, Harvard University, Boston, Massachusetts 02115. (Address correspondence to: Harben Boutourline Young, M.D., Harvard Florence Research Project, Via Venezia 10, Florence, Italy.)

Purpose: To observe the long-term effects of environment on growth and health; i.e., the influence of environmental factors upon physical and mental development, and their mode of action and interaction with genetic endowment.

Subjects: Several hundred males, studied from prepuberty, each with four grandparents from the same geographical zone of southern Italy, who now live in the markedly different cultures of Boston, Rome, and Palermo; other groups of 100 girls and several hundred boys in Florence, Italy; and 200 girls in Boston.

Methods: Repeated medical, anthropometric, and psychological examinations have been conducted, family interviews held (to evaluate childrearing practices), and nutritional and sociocultural data have been collected. Current work under analysis includes a cross-cultural study of moral values; studies of biological age and its estimation; estimation of socioeconomic status across cultures; and a study of changing hemoglobin values in adolescent males. Work that involves further and continuing data collection includes prediction of growth variables; a cross-cultural study of creativity and its environmental determinants; a study of left-handed subjects in the relatively permissive and intolerant cultures of the United States and Italy; and an analysis of menstrual symptoms in both cultures.

Duration: 1956-continuing.

Cooperating group(s): Grant Foundation; Wenner Gren Foundation; Olivetti Corporation; Universities of Florence, Rome, and Palermo.
Publications: *Perceptual and Motor Skills*, 1966, 23, 35-40; *Bulletin of the International Epidemiological Association*, 1965, 12, 1936; *American Journal of Diseases of Children*, 1963, 106, 568-577.

29-AA-3 CHILD HEALTH AND DEVELOPMENT STUDIES

Investigator(s): Jacob Yerushalmy, Ph.D., Professor of Biostatistics, School of Public Health, University of California at Berkeley, Berkeley, California 94720; Stephen Thomas, M.D., Director, Department of Obstetrics and Gynecology; and Edgar Schoen, M.D., Director, Department of Pediatrics, Kaiser Foundation Hospital, Oakland, California 94611.
Purpose: To investigate the relationship of parents' biologic, genetic, and environmental influences (including events during pregnancy, labor, and delivery) to the normal and abnormal development of offspring.
Subjects: Members of the Kaiser Foundation Health Plan (a prepaid medical care program) who reside in the San Francisco-East Bay area.
Methods: Expected byproducts of the investigation are the relationships of factors studied to (1) wasted pregnancies in the forms of early fetal death, perinatal mortality, infant and child mortality; and (2) estimates of the incidence of different types of abnormalities. The study is a prospective, longitudinal type involving both mother and child. Gravidas in the Department of Obstetrics and children in the Pediatric Department are observed, interviewed, and given laboratory examinations. Physicians' observations are systematized uniformly. Special efforts are made to obtain information on members of the study who do not return to the plan for medical care. Detailed growth curves for children, ages birth to 6, and estimates of illnesses and injuries in infancy and the preschool child will be derived on a longitudinal basis.
Duration: July 1959-indefinite.
Cooperating group(s): Permanente Medical Group; Kaiser Foundation Research Institute.
Publications: *Journal of Pediatrics*, August 1967, 71(2), 164-172; *Pediatrics*, 1967, 39, 940-941; *American Journal of Obstetrics and Gynecology*, February 15, 1964, 88(4), 505-518.

29-AA-4 THE BERKELEY, CALIFORNIA GROWTH STUDY

Investigator(s): Dorothy H. Eichorn, Ph.D., Research Psychologist, Institute of Human Development, University of California at Berkeley, Berkeley, California 94720.
Purpose: To study the mental and physical growth of normally healthy persons from birth to the present.
Subjects: 60 full-term, healthy newborns, born in Berkeley hospitals in 1928 to 1929 of white, English-speaking parents; and 140 offspring of these subjects, ages birth to 20, seen irregularly.
Methods: The same data, appropriate for age, were collected for the subjects and their offspring. Beginning in the first week of life, tests of mental and motor development, pediatric examinations, and interviews were conducted at frequent intervals during growth. At all visits, inquiries were made concerning current health and recent illnesses. Anthropometrics, body photographs, and skeletal X-rays were taken at most ages. Socioeconomic data were collected. Studies of the physical aspects of growth include analyses that compare health

histories with physical growth and with skeletal maturation. Emotional and other personality variables are being studied for consistency, and in various interrelations with maternal behavior in infancy, birth histories, socioeconomic status, and intellectual and physical growth.

Duration: 1928-continuing.

Publications: *American Psychologist*, 1968, 23(1), 1-17; *Monograph of the Society for Research in Child Development*, 1963, 28; Bayer, Leona and Bayley, Nancy. *Growth diagnosis: Selected methods for interpreting and predicting physical development from one year to maturity*. Chicago: University of Chicago Press, 1959.

29-AA-5 GROWTH OF PSYCHOPHYSIOLOGICAL PATTERNS IN INFANCY

Investigator(s): Wagner H. Bridger, M.D., Associate Professor of Psychiatry; and Beverly Birns, Ph.D., Assistant Professor of Psychology, Albert Einstein College of Medicine, Yeshiva University, Bronx, New York 10461.

Purpose: To investigate the origins and course of development of individual differences in neonates.

Subjects: Normal, healthy, full-term babies, 2 to 5 days old, born at Bronx Municipal Hospital Center.

Mehtods: A neonatal behavioral profile, which was established in previous studies, will be used. The profile includes behavioral and heart rate ratings on excitation, soothing, feeding, sleep, and nonstimulus periods of observation. Neonates will be followed at ages 2 weeks, and 1, 2, 3, and 4 months to measure the stability of early appearing traits and their relation to later behaviors. Data will be analyzed with respect to stability of early appearing behaviors and the relationship between neonatal behavior and maternal and birth history.

Duration: 1966-continuing.

Cooperating group(s): National Institute of Mental Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: In Grant Newton and Seymour Levine (Eds.), *Early experience and behavior: Psychobiology of development*. Springfield, Illinois: Charles C. Thomas, 1968; *Psychosomatic Medicine*, 1966, 28, 316.

29-AA-6 LONGITUDINAL STUDY OF DENTOFACIAL, SKELETAL, PHYSICAL GROWTH, AND NUTRITION OF CHILDREN

Investigator(s): Bhim S. Savara, D.M.D., M.S., Chairman, Child Study Clinic, Dental School, University of Oregon, Portland, Oregon 97201.

Purpose: To study the dentofacial growth of children, assessment and skeletal age related to facial growth, and variations in physique and its effect on dentofacial growth; and to determine heritable traits.

Subjects: 420 children, including 40 pairs of twins, ages 3 to 18. 300 children have been observed for more than 10 years.

Methods: Cephalograms, hand, wrist, and calf X-rays, intraoral X-rays, study casts, anthropometric measurements, and photographs are taken; and oral examinations are administered to the subjects. Children are examined every 6 months until they are 14 years old.

Duration: 1950-continuing.
Cooperating group(s): University of Oregon Dental School; National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.
Publications: *Angle Orthodontist*, 1968, 38, 104-120; *American Journal of Orthodontics*, 1969, 55, 133-153; *American Journal of Physical Anthropology*, 1969, 30(2), 315-318; *Bulletin of the Academy of General Dentistry*, June 1969, 27-31; *Journal of Dentistry for Children*, November-December 1969, 1-4; *American Journal of Orthodontics*, 1970, 57(6), 561-572; *Journal of Dental Research*, 1970, 49(4), 885; *Advances in Oral Biology*. New York: Academic Press, Inc., 1970. Pp. 1-9; *Journal of the American Dental Association*, 1970, 81, 653-661; *Oral Health*, 1971, 61(10), 19-28; *American Journal of Orthodontics*, *1971, 59(5), 488-500; Symposium on Close-Range Photogrammetry*. Urbana: University of Illinois, 1971. Pp. 365-369.

29-AA-7 NEW RADIOGRAPHIC STANDARDS OF REFERENCE FOR SKELETAL DEVELOPMENT OF CHILDREN AND STANDARDS IN PREPARATION

Investigator(s): S. Idell Pyle, Ph.D., Research Associate in Anatomy, School of Medicine, Case Western Reserve University, Cleveland, Ohio 44106; William W. Greulich, Ph.D., Research Biologist, National Institute of Child Health and Human Development, Bethesda, Maryland 20014; and staff of the National Center for Health Statistics involved in the National Health Survey, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D. C. 20201.
Purpose: To develop radiographic standards of reference for skeletal development of children to provide a basis for identifying maturity levels of growing bones in the hands, elbows, shoulders, hips, knees, and feet of children and youths according to the shapes of the bone shadows in an X-ray film
Subjects: Approximately 1,000 healthy individuals in Cleveland and Boston.
Methods: The bone shadows in an X-ray film display a modal rate of growth of each bone by illustrating regularly occurring osseous features which develop in series in the surface of the bone cortex as it calcifies. A reference standard consists of films arranged as a series to show sequential osseous features which are alike in males and females. It is an instrument for measuring the skeletal maturity level of children. Films of the subjects, covering the full span of growth from birth to adulthood, have been used to prepare standards. A standard of reference for joints in the upper extremity is in preparation, with the section on the hand and wrist showing the application of cardinal maturity indicators of individual bones to hand-wrist bones which are anomalous in the number of their bone growth centers. For published standards, see Publications below.
Cooperating group(s): Bolton-Brush Growth Study Center, Case Western Reserve University, Cleveland; Department of Maternal and Child Health, Harvard University School of Public Health, Boston; National Center for Health Statistics, Rockville, Maryland; Departments of Pediatrics and Endocrinology, Henry Ford Hospital, Detroit; Merrill-Palmer Institute, Detroit; Department of Education, Eastern Michigan University, Ypsilanti.
Publications: Greulich, W. W. and Pyle, S. I. *A radiographic atlas of skeletal development of the hand and wrist*. (2nd ed.) Stanford, California: Stanford University Press, 1959; Hoerr, N. L.; Pyle, S. I.; and Francis, C. C. *A radiographic atlas of skeletal development of the foot and ankle*. (1st ed.) Springfield, Illinois: Charles C. Thomas, 1962; Pyle, S. I. and Hoerr, N.

L. *A standard of reference for the growing knee.* (2nd ed.) Springfield, Illinois: Charles C. Thomas, 1969; Pyle, S. I.; Waterhouse, A. M.; and Greulich, W. W. *A standard of reference for the growing hand and wrist.* (1st ed.) Cleveland: The Press of Case Western Reserve University, 1971.

29-AA-8 METHODS IN CHARACTER DEVELOPMENT

Investigator(s): Ernest M. Ligon, Ph.D., Director; and staff, Union College Character Research Project, 10 Nott Terrace, Schenectady, New York 12308.

Purpose: To develop more effective methods in character development in cooperation with families and character training agencies. (Character is defined in terms of three dimensions: philosophy of values, breadth of social vision, and strength of purpose.)

Subjects: Children and families throughout the United States. The families belong to churches, YMCA's, and schools but participate in the study as individual families.

Methods: Procedures of the research are based on action research, in which the participants cooperate with the laboratory and use methods of coscientist research. Open-ended reports on research goals constitute the basic body of research data. An analysis of these data serves as the basis for the development of new procedures and for the scientific reports that are published concerning it.

Findings: Reports have been prepared concerning hypotheses tested in the home and character building agencies. Most of the findings relate to the home, learning, decision making, and methods for character development, plus descriptions of age level potentials, especially for decision making.

Duration: 1935-continuing.

Cooperating group(s): Lilly Endowment, Inc.

Publications: *A "guide" to the communications of the Character Research Project* (which lists 44 publications and includes a price list) is available from the investigator.

29-AA-9 LONGITUDINAL GROWTH STUDIES OF CHILDREN WITH CRANIOFACIAL BIRTH DEFECTS

Investigator(s): Samuel Pruzansky, D.D.S., Director, Center for Craniofacial Anomalies, Medical Center, University of Illinois, P. O. Box 6998, Chicago, Illinois 60680.

Purpose: To study the epidemiology, genetics, morphology, physiology, and postnatal development; and to plot the natural history of children with craniofacial birth defects.

Subjects: Over 3,000 subjects, males and females, from infancy to adulthood.

Methods: The subjects were initially studied as infants. Procedures included roentgenocephalometry, tomography, dental casts, and photographs. Speech and hearing, psychosocial, and pediatric evaluations supplied additional information.

Findings: Patterns of growth have been delineated that are useful in clinical management. Some conditions have been shown to get worse; some show spontaneous improvement; and others remain unchanged. Syndrome-specific cranial morphologies have been described and genetic significance has been described.

Cooperating group(s): Illinois State Pediatric Institute; Division of Services for Crippled Children, University of Illinois; Cook County Children's Hospital; Division of Research, Maternal and Child Health Services, National Institutes of Health, Public Health Service. U.S. Department of Health, Education, and Welfare; National Institute of Dental Research, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: *Cleft Palate Journal*, 1971, 8, 239. A list of articles in journals of dentistry, medicine, public health, speech and hearing, and psychology is available from the investigator.

29-AA-10 YOUTH REPORTS

Investigator(s): Cecelia E. Sudia, M.A., Research and Evaluation Division, Children's Bureau, Office of Child Development, U. S. Department of Health, Education, and Welfare, P. O. Box 1182, Washington, D. C. 20013.

Purpose: To collect and analyze opinions and values of high school age youths.

Subjects: 250 high school students.

Methods: Students were randomly chosen from youth enrolled in college preparatory courses in high schools selected to cover urban and suburban schools in each of 12 metropolitan areas in the United States. Each student was sent a set of short, open-ended questions and asked to report on the range of opinions in his school or neighborhood group. It is anticipated that the panel will be interviewed in this way two to three times a year. Replies are coded for content; analysis is both quantitative and qualitative.

Findings: The method of mail interview is successful with this group of students, and qualitative reports of opinion add considerable depth and range, as compared to typical polls of student opinions.

Duration: Spring 1969-continuing.

Publications: Teenagers discuss the "generation gap." *Youth Reports No. 1*, U. S. Department of Health, Education, and Welfare, 1969; Youth reporters discuss "problem drugs." *Youth Reports No. 2*, U. S. Department of Health, Education, and Welfare, 1970; Youth reporters discuss legal age restrictions. *Youth Reports No. 3*, U. S. Department of Health, Education, and Welfare, 1971.

29-AA-11 PHILADELPHIA CENTER FOR RESEARCH IN CHILD GROWTH

Investigator(s): Wilton M. Krogman, Ph.D., LL.D., Director, Philadelphia Center for Research in Child Growth; Geoffrey F. Walker, B.D.S., Director Philadelphia Center for Craniofacial Biology, University of Pennsylvania, Philadelphia, Pennsylvania 19146; and Francis E. Johnston, Ph.D., Department of Anthropology, University of Texas, Austin, Texas 78712.

Purpose: To develop standards and norms of physical growth and development for normal, healthy children in Philadelphia.

Subjects: 300 white boys and 300 white girls; 250 black boys and 250 black girls; ages 6 to 17.

Methods: Cephalometry and somatometry are employed. Measurements are linear, transverse, sagittal, circumferential, skin thickness (via skin calipers), X-ray films of left hand (routinely) and of upper arm or lower leg (reduced number of cases); also of head and face in *norma laterales sinistra* and *norma faciales* (roentgenographic cephalometry). Dental models are taken. Histories secured are (1) familial in terms of ethnic background and socioeconomic status; (2) medical (illness) and dental (occlusion, dental stage, oral habits); and (3) genetic, in terms of the familial occurrence of trait(s) considered. All data may be referred to several age categories: (1) chronological age, (2) dental or eruptive age, and (3) skeletal or biological age. All data have been put on microfilm, coded, and stored in computer memory. (1) *School*

Series: initially based on 600 normal, healthy, white 6- to 12-year-old school children from five Philadelphia schools (ultimately followed to 22 schools). These children have provided the core data upon which the 7- to 17-year standards are based. (2) *Negro American Series:* based on the semiannual study of 500 elementary school children. These children have provided the core data upon which the 7- to 17-year standards are based. (3) *Orthodontic Series:* now numbers 2,700 children from the Orthodontic Clinics of the University of Pennsylvania (2,000) and the Children's Hospital (500). All of these children have been followed through their treatment course (2 to 4 years, average). There are posttreatment follow-up studies on about 10 percent of them. (4) *Cleft Palate Series:* in cooperation with the Children's Hospital. These data are single preoperative roentgenographic cephalometric, plus selected somatometry. There are 600 such records and follow-up data on about 10 percent of these children. (5) *Cooley's Anemia Series:* based on 120 children. Measurements, X-ray films, familiogenetic histories were taken, and therapeutic treatment was given. (6) *Endocrine and Chromosomal Series:* Children seen on a referral basis from Children's Hospital.

Duration: 1949-1971.

Cooperating group(s): Children's Hospital of Philadelphia; Philadelphia Board of Education; School System, Archdiocese of Philadelphia; National Institute of Dental Research and National Institute of Child Health and Human Development, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: *Monograph of the Society for Research in Child Development*, May 1970, 35(3, Serial No. 136).

29-AA-12 LONGITUDINAL GROWTH STUDY OF GUATEMALAN CHILDREN OF DIFFERENT RACIAL HISTORIES AND SOCIOECONOMIC BACKGROUNDS

Investigator(s): Francis E. Johnston, Ph.D., Professor, Department of Anthropology, Temple University, Philadelphia, Pennsylvania 19122; Robert M. Malina, Ph.D., Associate Professor, University of Texas, Austin, Texas 78712; and Robert MacVean, Ed.D., Vice-Rector, Universidad del Valle de Guatemala; and Director, American School, Guatemala City, Guatemala.

Purpose: To study the interrelationships between growth measurements and performance measurements in a longitudinal sample of Guatemalan children of different genetic and socioeconomic backgrounds.

Subjects: Approximately 2,000 male and female students, ages 6 to 16, enrolled in two public and two private schools in Guatemala City are examined each year. Children are of Guatemalan, European, and North American backgrounds.

Methods: Subjects are examined each spring. Data gathered include anthropometric measurements, hand-wrist X-rays, results of intelligence and performance tests, and medical examination records. Cross-sectional and longitudinal analyses of data will be performed.

Duration: 1953-1975.

Cooperating group(s): American School, Quatemala City; Universidad del Valle de Guatemala; University of Texas, Austin.

29-AA-13 PROGNOSTIC VALUE OF NEONATAL BEHAVIORAL ASSESSMENTS

Investigator(s): Judy F. Rosenblith, Ph.D., Professor of Psychology, Wheaton College, Norton, Massachusetts 02766; and Associate Member, Institute of Life Sciences, Brown

University, Box 1910, Providence, Rhode Island 02912.

Purpose: To determine if standardized behavioral assessment of newborns can be used to identify a population at risk to later neurologically based developmental dysfunction.

Subjects: Approximately 1,750 newborns, 1,550 of whom participate in the Providence Collaborative Perinatal Research Project.

Methods: The Rosenblith modification of the Graham Scale, a behavioral assessment, was used to determine the neurological, muscular, and sensory status of the newborns. Prognostic value of this scale is determined by relating it to criteria obtained in the follow-up assessments of the Collaborative Perinatal Research Project. Replications of the original study based on 400 infants total almost four. Data are now complete through the fourth year psychological examination.

Findings: Newborn measure are related to development at 8 months of age. Specific newborn signs are prognostic of later dysfunction: hypersensitivity to light is indicative of severe neurological damage; unusual patterns of muscle tonicity are related to varying degress of developmental problems. The newborn assessments could be routinely adapted by hospitals: the equipment costs less than $10; the time required for assessment is less than a 1/2 hour; and the examination procedure can be taught to paraprofessional personnel.

Duration: January 1958-September 1975.

Cooperating group(s): Providence Lying-In Hospital; Child Development Study and Institute of Life Sciences, Brown University.

Publications: *Biologia Neonatorium*, 1970, 15, 217-228; *American Academy of Ophthalmology and Otolaryngology Transactions*, 1970, 74, 1215-1228; Dubois-Poolsen, Lairy, and Remond (Eds.) La fonction du regard. *Colloque*. 1971, 215-224 (published by Institut National de la Sante et de la Recherche Medicale, Paris).

29-AA-14 COLLABORATIVE STUDIES IN CEREBRAL PALSY AND OTHER NEUROLOGICAL AND SENSORY DISORDERS OF INFANCY AND CHILDHOOD

Investigator(s): Heinz W. Berendes, M.D., National Institute of Neurological Diseases and Stroke, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare, Bethesda, Maryland 20014.

Purpose: To investigate factors and conditions that affect parents: (1) conditions of pregnancy; e.g., infections, trauma, bleeding, drugs, and progress of labor; (2) environmental factors that influence the mother; e.g., social and economic conditions, emotional stress, and medical care; (3) biological factors in parents; e.g., age, parity, medical and reproductive history, and immunologic characteristics; and (4) the genetic background of the parents. To investigate in the offspring: disorders of the nervous system at the time of delivery or disorders that appear during infancy or early childhood, including cerebral palsy, mental subnormality, and behavioral disorders.

Subjects: Approximately 8,000 live births a year from collaborating institutions for 6 years. Offspring are followed until 8 years of age.

Methods: A detailed investigation of the independent variables will be directed towards the reevaluation of the effect of factors already suspected, clarification of the way in which these factors are operative, and the discovery of new factors. Information, from women studied during pregnancy and from their offspring throughout infancy and early childhood, will be collected and analyzed in a uniform way in a number of medical centers throughout the country. Intensive study is made of a limited number of cases; less intensive studies are conducted for as many damaged children and abnormal pregnancies as possible.

Duration: 1956-continuing.

Cooperating group(s): Charity Hospital, New Orleans, Louisiana; Johns Hopkins University, School of Medicine, Baltimore, Maryland; Boston Lying-In Hospital, Children's Medical Center, and Harvard University (Warren Anatomical Museum), Boston, Massachusetts; University of Minnesota Medical School, Minneapolis, Minnesota; Columbia-Presbyterian Medical Center, New York, New York; Children's Hospital of Buffalo, Buffalo, New York; University of Oregon Medical School, Portland, Oregon; Children's Hospital of Philadelphia and Pennsylvania Hospital, Philadelphia, Pennsylvania; Brown University, Providence, Rhode Island; University of Tennessee Medical School, Memphis, Tennessee; Medical College of Virginia, Richmond, Virginia.

Publications: Chipman, S. S.; Lilienfeld, A. M.; and Donnelly, J. F. (Eds.) ***Research methodology and needs in perinatal studies.*** Springfield, Illinois: Charles C. Thomas, 1966. Chapters 5 and 6. A bibliography is available from the investigator.

29-AA-15 STUDY OF PERSONALITY DEVELOPMENT BY THE TWIN INTRAPAIR COMPARISON METHOD

Investigator(s): William Pollin, M.D., Chief; Donald Cohen, M.D., Clinical Associate; and Eleanor Dibble, Research Social Worker, Section on Twin and Sibling Studies, Adult Psychiatry Branch, National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare, Bethesda, Maryland 20014.

Purpose: To understand the contributions of genetic, constitutional, and environmental factors to social, emotional, and cognitive development during the first years of life; specifically, to explicate the factors that underlie the emergence of individuality, using twins and triplets as subjects.

Subjects: Twins and triplets, from the prenatal period through elementary school age.

Methods: The central methodological principle emphasizes the effort to define precisely developmental difference within infant and childhood MZ twin pairs, and then search for the determinants of such differences. In the longitudinal study, parents are interviewed as soon as the diagnosis of a twin pregnancy is made. Neurological, pediatric, and developmental assessments are performed at birth and at 3- to 6-month intervals during the first years of life. The parents are interviewed at the same intervals about the children's development and family history. In the preschool period, the children receive standardized psychological testing, are observed in a standardized nursery school setting, and are administered projective psychological testing. Children and families are visited at home and also seen in structured office settings. In cross-sectional studies, children are seen for developmental evaluation, psychological assessment, and observations of free play, and their parents are interviewed. The value of questionnaire techniques is being investigated. A general research question relates to the way in which constitutional differences in the children elicit different types of parenting, and the ways in which differential parental behavior shapes the emergence of personality differences in the children.

Duration: 1967-1980.

29-AA-16 PREVENTIVELY ORIENTED SCHOOL MENTAL HEALTH PROGRAMS

Investigator(s): Emory L. Cowen, Ph.D., Professor, Department of Psychology, and Director; D. A. Dorr, Ph.D., Research Coordinator; L. D. Izzo, M.A., Chief Psychologist; and M. A. Trost, M.A., Chief Social Worker, Primary Mental Health Project, University of Rochester, River Campus Station, Rochester, New York 14627.

Purpose: To detect and prevent school maladaptation.

Subjects: 7,500 school children including 4,500 primary children in 11 preventively oriented school mental health programs.

Methods: Current research which originated in 1958 (see *Research Relating to Children*, Study 19-SS-7), includes 23 studies on training nonprofessionals, evaluation of programs, process analyses, selection-process relations, selection-outcome relations, and process-outcome relations. Between 20 and 30 different research instruments and assessment procedures are being used.

Duration: February 1969-continuing.

Cooperating group(s): University of Rochester.

29-AA-17 LANGUAGE ACQUISITION IN THE CONTEXT OF THE DEVELOPMENT OF BEHAVIOR AND INTERACTION

Investigator(s): Margaret Bullowa, M.D., Researcher, Speech Communication Group, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

Purpose: To find the steps by which early stages of the child's language development take place.

Subjects: Four firstborn children from white, English-speaking, middle class families.

Methods: Each child was observed from birth for at least 30 months at home at weekly intervals. On each visit a half hour continuous record was made on tape and film. An observer using a shielded microphone dictated a simultaneous description of ongoing behavior and interaction to supplement the film taken by a robot camera. A timing signal was placed on the tape and film every 5 seconds. (The tape and film from an observation may be synchronized during playback in the laboratory.) In addition, an independent team that consisted of a pediatrician and a developmental psychologist visited each baby's home once a month to assess other aspects of maturation and development. Indexes to sound and transcripts were made from the tapes to permit rapid search. Tapes are analyzed by linguists interested in phonological, semantic and syntactic features. Synchronized tape and film is studied by linguists and by the principal investigator, who is interested in the communicative behavior of which the vocalization forms a part.

Findings: The most significant finding is the apparent obligatory relationship between the child's vocal sound production and actions with the same meaning in early *performative sentences*. Such sentences are used by the child to communicate messages when he is showing something to someone, when he is greeting someone, etc. Another finding is the spontaneous appearance of sentences with topic-comment construction in the child's speech even though parents rarely use this construction. (The construction is not characteristic of adult American English.)

Duration: Pilot study, 1959-1965; present study, 1965-continuing.

Cooperating group(s): National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: *Journal of Child Psychiatry*, 1964, III(1), 53; *Monographs of the Society for Research in Child Development*, 1964, 29(1), 101-114; *Language and Speech*, 1964, 7(2), 107-111; *Quarterly Progress Report of the Research Laboratory of Electronics*, 1966, 81, 181-186; *Lingua*, 1967, 19(1), 1-59; *Foundations of Language*, 1967, 1, 37-65; Reibel, D. A. and Schane, S. A. (Eds.) *Modern studies in English*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969. Pp. 422-447; Bar-Adon, A. and Leopold, W. F. (Eds.) *Child language: A book of readings*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971; *Journal of the American Academy of Child Psychiatry*, 1971, 10(1), 124-135; *Quarterly Progress Report of the Research Laboratory of Electronics*, M.I.T., 1971, No. 100.

29-AA-18 THE HARVARD PRESCHOOL PROJECT

Investigator(s): Burton L. White, Ph. D., Director; Jean Watts, Ph.D., Co-director; and Barbara Kaban, M.A., The Harvard Preschool Project, Laboratory of Human Development, Graduate School of Education, Harvard University, 418 Larsen Hall, Appian Way, Cambridge, Massachusetts 02138.

Purpose: To trace the development of educability and competence in children during the first 6 years of life, and simultaneously to trace the role of experience in such development.

Subjects: Presently, 32 normal children, ages 12 to 32 months, of both sexes, half of whom were selected because they exhibited potentials to develop high degrees of general competence during the second and third years of life; while the other children seemed likely to develop a considerably lower level of competence.

Methods: The work in progress constitutes a longitudinal natural experiment. Data are collected by home observation and testing of the children on the average of 2 hours per week. One observational technique consists of tape recordings in which the observer describes the child's activities. The data are then coded onto forms using instruments developed for the project. Another technique involves a checklist record of behavior. Tests of language and cognitive development are administered regularly. Factors, including stream of experience, the child's competencies, and salient environmental influences, are measured.

Findings: Analysis of preliminary data indicates that the observation instruments are monitoring the development of competence in promising ways. Further indications of how childrearing practices influence the process are becoming clear. The mother or substitute, usually through indirect action, is seen as the major environmental influence on the development of competence. A longitudinal experiment will be initiated this year. (See *Research Relating to Children, Bulletin 22*, May-December 1967, Study 22-DA-3, p. 16.)

Duration: September 1965-continuing.

Cooperating group(s): U. S. Office of Economic Opportunity; Carnegie Corporation, New York; Head Start, Office of Child Development, U. S. Department of Health, Education, and Welfare.

GROWTH AND DEVELOPMENT

General

29-BA-1 FOLLOW-UP STUDY IN GROWTH OF TWINS AND COEVALS FROM AGE 9 UNTIL AGE 16

Investigator(s): Yngve Norinder, Professor, The Institute of Educational Research, Stockholm School of Education, S-100 26 Stockholm 34, Sweden.

Purpose: To develop methods to estimate the rate of growth of twins and the effects of heredity and environment on their growth.

Subjects: The sampling procedure began in 1964 with pupils in third grade, ages 9 to 10, in urban elementary school classes that contained twins. Three hundred twin pairs were represented from 41 towns and cities in Sweden. In the follow-up study, initiated in 1969, the core sample is composed of the original 300 twin pairs and 1,000 nonrelated coevals in grade 8.

Methods: Data were collected from body measurements; observations of the development of secondary sex characteristics; teachers' rating scales; pupils' self-assessment; sociometric tests; standard tests in school subjects; pupils' assessment of their performance in standard tests; group intelligence tests; tests of attentiveness, concentration, and perseverance; and retrospective data on the pupils' home and health conditions.

Duration: 1969-continuing.

Cooperating group(s): National Board of Education, Sweden.

29-BA-2 THE NORMAL ADOLESCENT PROJECT

Investigator(s): Daniel Offer, M.D., Associate Director, Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, 2959 South Ellis Avenue, Chicago, Illinois 60616.

Purpose: To study the psychology and behavior of a group of specially selected normal adolescents; to observe the factors that help them adjust and cause them to fail; and to test a theory obtained from retrospective studies.

Subjects: 73 middle class, primarily white, suburban high school boys. 61 of the boys were studied for 4 years following high school.

Methods: The group was selected from two suburban high schools by a specially constructed self-image questionnaire. The group is studied by psychiatric interviews, psychological testing, parents' interviews, school records, and teachers' ratings.

Findings: Results indicate that a relative lack of adolescent turmoil, good relationships with parents, and continued good adjustment from 14 to 22 years of age were characteristic of the group.

Duration: Fall 1962-fall 1972.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-BA-3 EARLY DEVELOPMENTAL ADVERSITY PROGRAM: PHASE III

Investigator(s): Thomas E. Jordan, Professor, Graduate School, University of Missouri, 8001 Natural Bridge Road, St. Louis, Missouri 63121.
Purpose: To study, the developmental histories of infants by the collection of statements that describe their behavioral-cognitive status.
Subjects: 1,005 infants, now age 5.
Methods: The Early Developmental Adversity Program is a prospective longitudinal research enterprise. It is an attempt to understand the various forms and incidence of learning problems in school children. From 1962 to 1965, during Phase I, pilot studies were undertaken; and procedural, conceptual, and methodological questions were examined. Phase II consisted of the procedural task of developing a birth cohort. In Phase III the subjects were studied from birth to age 5 through longitudinal, prospective, and epidemiological approaches. The birth cohort is composed of the major biological, racial, and social elements of the population. A multiple linear regression analysis will be made of the biological and environmental predictors of development.
Duration: 1960-continuing.
Cooperating group(s): National Program on Early Childhood Education; Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.
Publications: *Multivariate Behavioral Research Monograph*, 1971, 1.

Physical

29-CA-1 THE NEONATAL CRY: A NORMATIVE INVESTIGATION

Investigator(s): H. Stephen Caldwell, Ph.D., Assistant Professor, Department of Pediatrics, Children's Memorial Hospital; Medical Center, University of Oklahoma, 800 N. E. Thirteenth Street, Oklahoma City, Oklahoma 73104.
Purpose: To provide normative information on well baby cries over the first 4 days of postnatal life.
Subjects: A minimum of 15 subjects in each of four groups: Negro and Caucasian male and female neonates having an Apgar of no less than 8.
Methods: Each baby will have his cry recorded on the second, third, and fourth day of life. The acoustic dimensions of the cry to be measured include: cry latency, cry frequency, and total cry time. The statistical analysis of this data will be conducted through a 3-factor repeated measures analysis of variance design. Acoustic cry data will be correlated with information concerning the pregnancy, delivery, and pathologic processes that may be observed postnatally.
Duration: November 1970-September 1971.
Cooperating group(s): University of Oklahoma Medical Center.

29-CA-2 UNDERSTANDING HOSPITALIZED CHILDREN THROUGH DRAWINGS

Investigator(s): Juanita Wilson Fleming, Ph.D., Associate Professor, College of Nursing, University of Kentucky, Lexington, Kentucky 40506.

Purpose: To determine if there were significant differences in projective drawings of hospitalized children with acute, chronic, and physically handicapped conditions; and to attempt to establish baseline data.

Subjects: 123 children, ages 5 to 13, who were diagnosed as acutely ill, chronically ill, and handicapped; and a control group.

Methods: Each subject drew a person and his family and responded to a family relations test and a projective picture test. Mothers responded to a mother-child relationship scale. Variables including age, sex, socioeconomic status, days in the hospital, and number of hospital admissions were controlled.

Findings: Significant differences between groups were found on drawings and several other variables.

Duration: September 1970-September 1971.

Cooperating group(s): American Nurses Foundation.

29-CA-3 CYCLOPHOSPHAMIDE IN NEPHROTIC SYNDROME OF CHILDHOOD

Investigator(s): Henry L. Barnett, M.D., Associate Dean, Clinical Affairs, Albert Einstein College of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461.

Purpose: To determine the effectiveness of cyclophosphamide in the nephrotic syndrome of childhood, and to define the natural history of the disease.

Subjects: About 350 patients, male and female, ages 6 months to 15 years.

Methods: A controlled clinical trial of cyclophosphamide will be made in two groups of patients: those who do not respond to conventional steroid therapy; and those who respond but have frequent recurrences of proteinuria. The trial will be conducted in previously untreated patients who will be followed for a period of at least 5 years. In addition to the trial of cyclophosphamide therapy, the natural history of the disease will be studied; and the relationships of prognosis to pathology, laboratory examinations, and other variables will be examined. The prospective study will be based on precise definitions and random allocation of patients to control and experimental groups. Data will be collected and analyzed by a central office.

Duration: 1970-1972.

Cooperating group(s): Twenty-two clinics in Europe, Asia, South and North America; National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Controlled trial of azathioprine in children with nephrotic syndrome. *Lancet*, 1970, 1, 959; Pathology of the nephrotic syndrome in children. *Lancet*, 1970, 1, 1299; Clinical-pathological correlations in the nephrotic syndrome *Pediatric Research*, 1971, 5, 383.

29-CA-4 CLINICAL AND CHROMOSOMAL VARIATION IN 11,000 CHILDREN

Investigator(s): Maimon Cohen, Ph.D., Buffalo Children's Hospital, 219 Bryant, Buffalo, New York 14222; Park Gerald, M.D., Children's Hospital Medical Center, 300 Longwood Avenue, Boston, Massachusetts 02115; Fred Hecht, M.D., University of Oregon Medical School, 318 S.W. Sam Jackson, Portland, Oregon 97201; Paul Moorhead, Ph.D., University of Pennsylvania, Philadelphia, Pennsylvania 19104; and Robert Summitt, M.D., University of Tennessee, Knoxville, Tennessee 37916.
Purpose: To determine the significance of variation in human karyotypes.
Subjects: 11,000 7-year-old children included in the National Collaborative study of cerebral palsy, mental retardation, and other neurological and sensory disorders of infancy and childhood.
Methods: Chromosome preparations are carried out on each child and variations in morphology on length are correlated with the available clinical and psychological information.
Duration: January 1971-December 1973.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-CA-5 PRESCHOOL CHILDREN'S USE OF SPACE AND PLAY EQUIPMENT

Investigator(s): Lawrence V. Harper, Ph.D., Assistant Professor, Department of Applied Behavioral Sciences, University of California at Davis, Davis, California 95616.
Purpose: To identify physical settings that foster urban and rural reared children's use of facilities and their adjustment to preschool programs.
Subjects: 30 preschool children: 16 girls and 14 boys, ages 3 to 5.
Methods: Weekly 1-hour sampled observations were made of free play at 15-second intervals for 25 weeks. The males were compared to the females, and the second year children were compared to the first year children. The data recorded included where the child played, with whom, with what, for how long, and the apparent effects.
Findings: Sex differences are apparent in the amount of space used and the kinds of toys used.
Duration: August 1971-October 1971.
Cooperating group(s): Agricultural Experimental Station, University of California, Davis.

29-CB-1 THE STIGMA OF OVERWEIGHT: SIX AUTOBIOGRAPHIES

Investigator(s): Werner J. Cahnman, Ph.D., Professor Emeritus, Department of Sociology, Rutgers, The State University, Newark, New Jersey; and Faculty Member, New School for Social Research, New York, New York. Address correspondence to: 67-71 Yellowstone Boulevard, Forest Hills, New York 11375.
Purpose: To investigate the problem of obesity through the study of six young adults.
Subjects: Six college students: 1 boy, 5 girls, age 20.
Methods: A pilot study was conducted in which 25 girls and 6 boys in the New York City Obesity Clinic were briefly interviewed for background material. In the final study, six subjects were asked to answer 11 wide-ranging questions and were repeatedly interviewed. Final autobiographical write-ups were collected from the subjects.

Duration: 1967-completed.

Publications: *Sociology Quarterly*, Summer 1968; *Adolescent Medicine*, October 1971, 3(10); A report of the research is available from the investigator. Please enclose $0.50 in stamps to cover postage.

29-CC-1 HEREDITARY, ENVIRONMENTAL, AND DEVELOPMENTAL PROBLEMS IN PEDIATRIC OPHTHALMOLOGY

Investigator(s): William C. Edwards, M.D., Associate Professor; and Theodore Lawwill, M.D., Associate Professor, Department of Ophthalmology, School of Medicine, University of Louisville, 301 East Walnut Street, Louisville, Kentucky 40202.

Purpose: To establish an ongoing research unit in pediatric ophthalmology with special reference to social, environmental, and hereditary factors.

Subjects: Children examined in the University of Louisville Department of Ophthalmology, Section of Pediatric Ophthalmology.

Methods: Information will be collected in the field of pediatric ophthalmology by interview, documentation, and storage of data in a computer.

Duration: 1969-1972.

Cooperating group(s): Child Evaluation Center, Department of Pediatrics, Commission for Handicapped Children; Lions Foundation; Kentucky School for the Blind.

29-CC-2 SENSORY EVOKED EEG AND BEHAVIORAL RESPONSES IN CHILDREN

Investigator(s): Ann B. Barnet, M.D., Director, EEG Research Laboratory, Children's Hospital of the District of Columbia, 2125 Thirteenth Street, N.W., Washington, D. C. 20009.

Purpose: To determine the course of development of electroencephalogram (EEG) auditory and visual evoked responses in normal children; to examine some of the relationships of the electrophysiology measures to other measures of sensory development; and to develop diagnostic application of evoked response techniques in handicapped children.

Subjects: 500 children, ages 0 to 3.

Methods: At intervals during the first 3 years, 210 recordings were made on a cross-sectional population. Computer averaging is performed on responses to sets of auditory and visual stimuli presented while the EEG is being recorded. Serial recordings are made of normal children. Relationships of evoked response to EEG sleep patterns, psychological test scores, and stimulus parameters are examined. Children with Down's Syndrome, some of whom are given 5-HTP, and children with neurological or sensory disorders are tested.

Findings: Results indicate that orderly developmental sequences occur; evoked response methods are found to be useful in the differential diagnosis of hearing loss in young children.

Duration: 1964-1975.

Cooperating group(s): Children's Hospital of the District of Columbia Research Foundation; Department of Experimental Psychophysiology, Walter Reed Army Institute of Research; National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Lodge, A.; Armington, J.; Barnet, A. B.; Shanks, B.; and Newcomb, C.

Newborn infants' electroretinograms and evoked electroencephalographic responses to orange and white light. *Child Development*, 1969, 40, 267-291; Barnet, A. B.; Manson, J. I.; and Wilner, E. Acute cerebral blindness in childhood: Six cases studied clinically and electroencephalographically. *Neurology*, 1970, 20, 1147-1156; Barnet, A. B. Evoked potentials in handicapped children. *Developmental Medicine and Child Neurology*, 1971, 13, 313-320.

29-CC-3 SCREENING AUDIOLINGUISTIC SKILLS IN ELEMENTARY SCHOOL CHILDREN

Investigator(s): Merlin J. Mecham, Ph.D., Director, Speech Pathology and Audiology, University of Utah, Behavioral Sciences Building, Room 1201, Salt Lake City, Utah 84112.

Purpose: To develop rapid and reliable methods to screen large numbers of kindergarten children for audiolinguistic difficulties.

Subjects: 1,000 kindergarten children in Salt Lake City public schools who were selected randomly.

Methods: Ten speech clinicians administered the Utah Test of Language Development. An item analysis indicated small clusters of items and their efficiency as a screening device when administered as a screening subtest with kindergarten children.

Findings: The best combination of items screened out 100 percent of the language delayed children, and the combination of items took approximately 5 minutes to administer.

Duration: September 1970-August 1972.

Cooperating group(s): Salt Lake City School District.

29-CD-1 TELEVISED VIOLENCE AND DREAM CONTENT

Investigator(s): David Foulkes, Ph.D., Professor, University of Wyoming, Box 3291, University Station, Laramie, Wyoming 82070.

Purpose: To assess the effects of violent versus nonviolent typical television programs on the dream content and sleep behavior of children.

Subjects: 40 male preadolescents, ages 10 to 12: 20 with a history of high prior exposure to television violence; 20 with a history of low prior exposure to television violence.

Methods: Subjects viewed films in a presleep period. Their sleep was monitored for rapid eye movement (REM) periods from which they were awakened for the retrieval of dream content. Dreams were then rated or scored by independent judges for general intensity, hedonic tone, hostility, guilt, and anxiety.

Findings: No main effects of the film variable on any parameter of sleep or dream content were observed.

Duration: July 1970-May 1971.

Cooperating group(s): Surgeon General's Scientific Advisory Committee on Television and Social Behavior; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-CE-1 APPLIED NUTRITION RESEARCH IN THE VULNERABLE GROUPS

Investigator(s): Josefina Bulatao-Jayme, M.D., Chief, Medical and Applied Nutrition Division; Jacinto Bautista, M.D.; Aida Reyno, B.S.; Teresita Santos, B.S.; Isabelita Clemente, B.S.; and Amador Gaurano, Medical Technician, Food and Nutrition Research Center, National Institute of Science and Technology, National Science Development Board, Herran, Manila, Philippines D-406.

Purpose: To study the feasibility of improving the nutritional status of mothers and children using scientific knowledge in nutrition.

Subjects: 56 preschool boys and girls, ages 1 to 6, from a middle low income group; and 28 mothers.

Methods: A feasibility survey will be made to determine the needs of the community and the willingness of the families to cooperate. A nutrition club will then be organized to assist the project physician and nutritionist to implement activities. A baseline survey will be conducted to determine food intake, height of the children, weight, skinfold thickness, and vitamin A in the blood. Stools will be examined for intestinal parasites. The mothers will be educated on nutrition. In a supplementary feeding program the mothers will prepare and serve high protein foods once a day under the supervision of a nutritionist. The food materials are paid for by the mothers. The weight of the children will be measured weekly, and their height will be measured every 3 months.

Duration: May 1970-June 1974.

Cooperating group(s): Social Welfare Organization, District IV, Manila; Magallanes Homeowners Association; Assumption Mothers Organization.

29-CE-2 HIGH PROTEIN FOOD FEEDING OPERATION

Investigator(s): Carmen Intengan, Ph.D., Assistant Research Director; Angelina A. Bayan, M.D.; Josefina Magbitang, B.S.; and Dulce Nagtalon, B.S., Food and Nutrition Research Center, National Institute of Science and Technology, National Science Development Board, Herran, Manila, Philippines D-406.

Purpose: To evaluate nutritionally some foods, food mixtures, and prepared food products produced by the Food Research Laboratory that may be used as dietary supplements; and to determine their suitability, acceptability, tolerance, and ability to promote growth in infants and young children.

Subjects: Eight boys and girls, ages 1 to 4, who live in an orphanage; and a matched control group of 8 children.

Methods: Baseline data were collected to determine height, weight, arm skinfold measurement, and head and chest circumference of the children. Food was weighed for 3 days to determine actual food intake. The food product to be tested is a mixture of mango flour (80 percent), coconut flour (15 percent), and milk solids (5 percent). This mixture, called "CMM mix," has a protein content of 27.6 g/100 grams dry basis. One serving portion of this preparation, sauteed with vegetables containing 30 grams of the CMM mix, yields about 400 calories. The controls receive the usual diet, while the experimental group receives the CMM mix. Diet is calculated to meet the recommended daily allowance for energy and various nutrients. The first 2 weeks of the feeding determined acceptability and tolerance. Over 6 months growth will be measured by weighing the children weekly, and they will be measured for height monthly. Both groups will receive vitamin-mineral supplement.

Findings: The CMM mix was well tolerated, and the subjects were able to finish one serving portion or more. Growth data are currently being collected.
Duration: August 1971-June 1973.
Cooperating group(s): Hospicio de San Jose Orphanage, Manila.

29-CE-3 ADULTS' INFLUENCE ON CHILDREN'S DIET

Investigator(s): Lawrence V. Harper, Ph.D., Assistant Professor, Department of Applied Behavioral Sciences, University of California at Davis, Davis, California 95616.
Purpose: To evaluate the effects of an adult's sharing food with a child compared to his offering food to the child, and to study the effects of the child's familiarity with the adult and the child's age on acceptance of food.
Subjects: 80 children: 20 males and 20 females, ages 14 to 20 months; and 20 females and 20 males, ages 42 to 48 months.
Methods: The children were divided equally according to age, sex, mother or stranger, and adult offering or sharing food. The experimenter brings novel food to the child's home, and after a warm-up period, the child, mother, and experimenter eat. A chi-square comparison is made of the number of children who accept the food and the child's age, sex, the adult, and the condition. Results of the Mann-Whitney Test, used to measure latency and the amount eaten, are compared with the number of children who request food.
Findings: The adult's eating food appears to facilitate acceptance on the part of the younger children only.
Duration: June 1971-August 1971.
Cooperating group(s): U. S. Department of Agriculture.

29-CE-4 NATIONWIDE SURVEY OF FOOD INTAKE OF INDIVIDUALS

Investigator(s): S. F. Adelson, Chief, Food Consumption Branch; L. J. Fincher, Home Economist; and E. Grossman, Chief, Survey Statistics Staff, Consumer and Food Economics Research Division, Agricultural Research Service, U. S. Department of Agriculture, Room 337, Federal Center Building, Hyattsville, Maryland 20782.
Purpose: To obtain information on food and nutrient intake of individuals in the United States, and to analyze and report findings.
Subjects: A representative sample of 14,519 men, women, and children from 6,142 households in the United States, including 4,050 infants and children under age 9.
Methods: Trained interviewers collected data on the food individuals ate for a 24-hour period. The data included the kind, quantity, and method of preparation of foods and beverages eaten at home and away from home; the time of day the food was eaten; and whether vitamin or mineral supplements were taken. Data were tabulated by sex-age groups.
Findings: On the basis of average diets of children under 4 years of age from households with low incomes, the major problem was low intake of iron. Average intakes of ascorbic acid and calcium were also below recommended levels for some groups of children. The average dietary content of calcium was above recommended minimum levels for infants under 1 year of age.
Duration: November 1964-March 1971.

29-CF-1 A STATISTICAL AND MORPHOLOGICAL STUDY OF DISEASES AND NEOPLASMS OF THE MAJOR AND MINOR SALIVARY GLANDS

Investigator(s): Sigurds O. Krolls, D.D.S., M.S., Oral Pathologist; John N. Trodahl, D.S.S., M.S.D., Oral Pathologist; and Robert C. Boyers, D.D.S., M.S.D., Chief Dental and Oral Pathology Division, Armed Forces Institute of Pathology, MEDEM-PG, Washington, D.C. 20305.

Purpose: To establish the entities that involve the salivary glands in children.

Subjects: 430 children, ages 0 to 15, with pathologic diagnoses involving the salivary glands, who have been accessioned at the Armed Forces Institute of Pathology(AFIP).

Methods: A survey of material at the AFIP was made. The lesions discovered were categorized according to their histomorphology.

Findings: Of the 430 cases studied, 253 were inflammatory or reactive in nature: there were 39 vascular tumors, 60 benign salivary gland neoplasms, 35 malignant salivary gland neoplasms, 18 mesenchymal neoplasms, 6 lymphomas, 2 metastatic lesions, and 18 miscellaneous conditions.

Duration: 1968-1971.

29-CF-2 MICROBIAL ETIOLOGY OF DENTAL CARIES

Investigator(s): Robert J. Fitzgerald, Ph.D., Head; and Beatrice O. Brust, B.A., Microbiologist, Dental Research Unit, Veterans Administration Hospital, 1200 Anastasia Avenue, Miami, Florida 33134; Luis Duany, Ph.D., D.D.S., Associate Professor; and Dorothea B. Fitzgerald, B.S., Assistant Professor, Department of Oral Biology, University of Miami, Coral Gables, Florida 33124.

Purpose: To identify microorganisms that are etiologically involved in dental caries in children.

Subjects: 75 boys and girls, ages 9 to 12, with various dental caries experience, who attend Puerto Rican grade schools.

Methods: Microbial deposits from sound and carious tooth surfaces are analyzed for numbers and types of lactobacilli and streptococci. Potential cariogenicity of various bacterial types is tested in germ-free rats or limited flora hamsters.

Duration: 1970-1973.

Cooperating group(s): Veterans Adminstration; Institute of Oral Biology, University of Miami; National Institute of Dental Research, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-CF-3 POPULATION STUDIES OF ORAL DISEASES IN HAWAII

Investigator(s): Chin S. Chung, Ph.D., Professor, School of Public Health, University of Hawaii, Spalding Hall, Room 255, Honolulu, Hawaii 96822.

Purpose: To study the genetic and epidemiological factors involved in the etiology of oral diseases of adolescents, including dental caries, periodontal disease, dental anomalies, and malocclusion.

Subjects: Approximately 18,000 students, ages 12 to 18, of both sexes and all racial groups in Hawaii.

Methods: Students in 18 public schools were interviewed and examined for dental caries, periodontal disease, oral anomalies, and malocclusion. DMF and P.I. scores were used for dental caries and periodontal disease respectively. Malocclusion was evaluated by buccal segment relationship at the third molar and individual components. The model of diallele cross was used for analysis of racial variation of the various traits after allowance for epidemiological factors.

Findings: There are significant racial variations in many dental characteristics studied. Children of Japanese and Hawaiian ancestry showed a significantly higher degree of dental caries with the least amount observed among Caucasians. There are characteristic occlusion patterns for Hawaiians, Orientals, Caucasians, and Filipinos.

Duration: June 1967-August 1976.

Cooperating group(s): National Institute of Dental Research, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: *Journal of Dental Research*, 1970, 49, 1374-1385; *American Journal of Human Genetics*, 1971, 23(5), 471-495; *Human Biology*, 1971, 43(1), 36-45.

29-CF-4 EFFECT OF A TRIMETHYLPHOSPHATE (TMP) CHEWING GUM TO REDUCE DENTAL CARIES

Investigator(s): Sidney B. Finn, D.M.D., Professor of Dentistry, Institute of Dental Research, University of Alabama, 1919 Seventh Avenue South, Birmingham, Alabama 35233.

Purpose: To study the effects of trimethylphosphate (TMP) to reduce dental caries in children.

Subjects: 600 children, ages 6 to 18, at the Florida State School for the Deaf and Blind.

Methods: The children will be divided into four groups: (1) Group 1 will chew a sugar gum containing a regular 1-1/2 percent sodium mi-phosphate. (2) Group 2 will receive a sugarless gum, (3) Group 3 will consume a sugarless gum with TMP added, and (4) Group 3 will not receive gum. Each group will chew the gum three times daily: once after breakfast, once after lunch, and once before retiring. Semiannual examinations will be made by radiographs and clinical examination.

Duration: 1971-1974.

Cooperating group(s): National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-CG-1 AN INVESTIGATION OF DECISION MAKING IN THE HYPERACTIVE CHILD

Investigator(s): Nora Tumin Jacobs, Ph.D., Department of Education, University of California at Los Angeles, Los Angeles, California 90024. Address correspondence to: 221 Entrada Drive, Santa Monica, California 90402.

Purpose: To investigate the performance of hyperactive children in terms of the reaction time, decision time, and motor response time components of a task under varying levels of task complexity; and to compare their performances with the performances of nonhyperactive children under the same conditions.

Subjects: 30 boys, ages 7 to 11, of average or above average intelligence, who demonstrated hyperactive behavior and were selected from educationally handicapped classes; and a control group of 30 boys matched for age and IQ.

Methods: Procedures of the investigation are carried out in two stages. Stage I is designed to measure simple reaction time (time the subject takes to release a key as soon as he perceives the onset of a light located on a panel in front of him), simple motor reaction time (time the subject takes to press a key as soon as he perceives the onset of a light located on a panel in front of him; subject's hand will be resting close to the key prior to stimulus onset), and simple decision making time (a disjunction reaction or choice reaction time in which the subject is presented with two stimuli. He will be instructed to "press the key" for one stimulus and to "not press" for the other stimulus). Each time will be determined by a series of 20 trials. Stage II is designed to measure motor response time and decision making time for tasks involving increased complexity in the decision making process. During Stage II subjects are asked to sort a regular deck of playing cards in a manner that involves increased complexity in the decision making process. In order to arrive at a decision making time measure, Donder's subtractive method has been utilized. All simple and complex tasks are administered on an individual basis to all subjects. It is hypothesized that hyperactive children differ from normal children in the decision making time component of a task, and that with increased complexity, these differences will increase. No differences are expected between the performances of hyperactive boys and normal boys on the simple reaction time task, the simple motor reaction time task, and the simple decision making task.

Duration: April 1971-October 1971.

Cooperating group(s): Torrance Unified School District, Torrance, California.

29-CH-1 VOICE DISORDERS IN SCHOOL AGE CHILDREN

Investigator(s): Frank B. Wilson, Ph.D., Director, Division of Speech Pathology, The Jewish Hospital of St. Louis, 216 Kingshighway, St. Louis, Missouri 63110; and Associate Professor, Central Institute for the Deaf, Washington University, St. Louis, Missouri 63130.

Purpose: To explore the problems of children with voice deviations.

Subjects: Male and female children with voice deviations enrolled in schools in the city of St. Louis and St. Louis County, grades kindergarten to 12; and a control group of normal children.

Methods: Children with specific voice deviations are compared to normal children. Statistical treatment varies from simple head count to more elaborate statistical manipulation of specific deviant groups. A considerable amount of information is gained by the use of audio- and videotaping. Additional photography of the laryngeal mechanism of children is a part of the information gained in the process.

Duration: May 1966-December 1971.

Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; Special School District of St. Louis County; Washington University.

Intellectual

29-DB-1 A PIAGETIAN TEST OF COGNITIVE DEVELOPMENT

Investigator(s): Read D. Tuddenham, Ph.D., Professor, Department of Psychology, University of California at Berkeley, Berkeley, California 94720.

Purpose: To develop a set of relatively objective and quantifiable psychometric items based on experiments on the cognitive level by Jean Piaget and associates.

Subjects: Approximately 250 boys and 250 girls in grades 1 through 7.

Methods: The research involves a pedagogical project for a university course in test development. Psychology students develop items, and after criticism and pilot studies, try them out on public school children of appropriate age. Grade level norms are preliminary. No formal standardization has been undertaken. Items cover the age range from 6 years (preoperational to concrete operations) to 13 years (concrete operations to formal operations). Content includes the various conservations, spatial items, seriation, transitivity, and such advanced problems as pendulum, balance, and displacement.

Findings: Correlations *between* items presumably at the same stage are lower than anticipated by theory, although Guttman Scales seem to be present *within* certain items.

Duration: 1963-continuing.

Cooperating group(s): Richmond Public School System, California.

Publications: Tuddenham, R. D. *A Piagetian test of intelligence.* Ontario Institute for Studies in Education Symposium, "On Intelligence." London: Methuen, 1971; Tuddenham, R. D. Theoretical regularities and individual idiosyncracies. In R. Green and M. Ford (Eds.), *Measurement and Piaget.* New York: McGraw Hill, 1971.

29-DB-2 PATTERNS OF DEVELOPMENTAL CHANGE IN MENTAL ABILITIES

Investigator(s): Robert B. McCall, Ph.D., Chairman and Senior Research Investigator, Department of Psychology, Fels Research Institute for the Study of Human Development, Yellow Springs, Ohio 45387.

Purpose: To discern patterns of continuities between specific items and abilities during infancy and their relationship to later IQ; to describe patterns of IQ change during childhood; and to relate these patterns to parental behavior and demographic variables.

Subjects: Subject samples that range from 80 to 220 include children of both sexes from all socioeconomic classes except the severely impoverished. The samples are drawn from the Fels Longitudinal Study.

Methods: To discern trends of continuity in the ability of infants involves performing component analyses of Gesell protocols administered at 6, 12, 18, and 24 months of age, and correlating component scores across age and with later IQ. To describe patterns of IQ change during childhood (3 to 17 years) involves performing Tucker's Factor Analysis of Repeated Measurement followed by Overall's Clustering Technique resulting in groups of subjects who have different patterns of IQ change. Multivariate statistics will relate these groups to differing parental behavior and demographic variables. Comparison of trends in mental test performance between siblings and unrelated children is accomplished by using the squared distance technique as well as Wilson's modified analysis of variance.

Duration: January 1970-continuing.

Cooperating group(s): Fels Fund of Philadelphia; National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-DB-3 TUTORIAL PROGRAM FOR THE DIAGNOSIS AND REMEDIATION OF PRESCHOOL COGNITIVE DEFICIENCIES

Investigator(s): Marion S. Blank, Ph.D., Associate Professor, Department of Psychiatry, Albert Einstein College of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461.

Purpose: To develop a tutorial program for the diagnosis and remediation of preschool cognitive deficiencies.

Subjects: Approximately 300 preschool children, ages 3 to 5, from middle and lower socioeconomic groups.

Methods: Specialized tests will be developed to assess perception, coping, problem solving, and spatial representation in the preschool age child.

Duration: September 1970-August 1973.

Cooperating group(s): Grant Foundation, Inc.

29-DC-1 ELABORATIVE FACILITATION AND LEARNING IN CHILDREN

Investigator(s): William D. Rohwer, Jr., Ph.D., Professor of Education and Research Psychologist, Institute of Human Learning, University of California at Berkeley, Berkeley, California 94720.

Purpose: To identify, analyze experimentally, and explore the generality of elaborative prompts to learning activities in children.

Subjects: Caucasian, Afro-American, Chinese, and Mexican-American children, ages 4 to 17, in several different populations. Some studies sample males and females equally; high and low socioeconomic groups are sampled.

Methods: A wide variety of studies include the use of the methods of paired associate and free recall learning, retention, transfer, and text comprehension, in experimental, developmental, comparative, and individual differences designs, manipulating a number of task variables including materials and instructions. Statistical techniques include univariate and multivariate analysis of variance, correlation, and regression.

Duration: January 1969-December 1971.

Cooperating group(s): National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare; National Science Foundation.

Publications: Preliminary reports are available from the investigator.

29-DC-2 ORGANIZATIONAL VARIABLES AMONG 7-YEAR-OLDS

Investigator(s): R. Solso, Ph.D., Associate Professor, Department of Psychology, Loyola University, 6525 Sheridan Road, Chicago, Illinois 60626.

Purpose: To study the influence of categories on paired associate acquisition in children.

Subjects: Approximately 100 seven-year-old boys and girls.

Methods: Standard paired associate learning will be studied with stimuli and response varied by classes. Response learning and associate learning will also be studied. Data will be treated by analysis of variance.

Duration: October 1971-January 1972.

29-DC-3 INFANT LEARNING PROJECT

Investigator(s): Bryon W. Wight, M.A., Associate Professor, Department of Maternal and Child Health, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania 15213.
Purpose: To study administrative personnel training and teaching implications in order to modify child care through the use of paraprofessionals in an infant intervention program.
Subjects: 110 infants, ages 1 to 24 months, from poverty areas of Pittsburgh; and their families.
Methods: The subjects are seen in the Maternal and Infant Care Program, a supervision and treatment clinic for high risk infants located at Children's Hospital, Pittsburgh. Indigenous personnel function as child development workers and visit the infants' homes weekly. The study and control groups are compared on developmental assessments. The influence of health, family adjustment, child care patterns, and methods of intervention in various areas of development are investigated.
Duration: July 1969-July 1973.
Cooperating group(s): Allegheny County Public Health Department.

29-DC-4 TEACHER PREPARATION PROGRAM: EARLY CHILDHOOD

Investigator(s): Laurel Hodgden, Ph.D., Visiting Associate Professor; and Jane Raph, Ed.D., Professor, Early Childhood Project, Graduate School of Education, Rutgers, The State University, New Brunswick, New Jersey 08903.
Purpose: To develop a study that originated at Cornell University in early childhood development and education, and to use the results of this work in a teacher preparation program in early childhood.
Subjects: Forty 4-year-old and thirty 5-year-old children who attend a teacher preparation center affiliated with the Graduate School of Education at Rutgers University and the New Brunswick public schools. The children are black and Puerto Rican, from low income inner city homes.
Methods: The original study was undertaken by Professor Laurel Hodgden at the Center for Research in Education, Cornell University, Ithaca, New York 14850. In this phase of the study, 20 teacher interns (graduate students at Rutgers) are each studying five children and planning a teaching program to meet the children's needs.
Duration: September 1971-July 1972.
Cooperating group(s):. Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; New Brunswick public schools; Urban Teacher Education Corps, New Jersey.
Publications: Hodgden, L. *School before six: A diagnostic approach.* This paper is available from: Mailing Room, Research Park, Cornell University, Ithaca, New York 14850.

29-DD-1 COMPARATIVE STUDY OF WPPSI AND WISC PERFORMANCE IN DISADVANTAGED CHILDREN

Investigator(s): A. Barclay, Ph.D., Professor, Department of Psychology; and A. Yater, Ph.D., Professor, Department of Education, St. Louis University, 221 North Grand Boulevard, St. Louis, Missouri 63103.

Purpose: To determine the comparability of the psychometric data from the Wechsler Preschool Primary Scale of Intelligence (WPPSI) and the Wechsler Intelligence Scale for Children (WISC).

Subjects: 20 kindergarten and 20 first grade black, disadvantaged boys and girls.

Methods: A comparison of mean verbal, performance, and full scale IQ will be made of the children on the WPPSI and the WISC.

Findings: Clinical impression and observation indicate that the WISC seems to be somewhat less difficult for the subjects than the WPPSI.

Duration: January 1970-July 1971.

Cooperating group(s): St. Louis Board of Education.

29-DE-1 STUDIES OF PIAGET'S THEORY OF THE DEVELOPMENT OF THE OBJECT CONCEPT IN INFANCY

Investigator(s): Gerald Gratch, Ph.D., Professor, Department of Psychology, University of Houston, Houston, Texas 77004.

Purpose: To evaluate and extend Piaget's account of Stages III and VI.

Subjects: Infants, ages 6 to 18 months.

Methods: Variations will be made on delayed response and other hiding procedures.

Duration: September 1968-June 1972.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Evans, W. F. and Gratch, G. The stage IV error in Piaget's theory of object concept development: Difficulties in object conceptualization or spatial localization? *Child Development,* June 1972; LeCompte, G. F. and Gratch, G. Violation of a rule as a method of diagnosing infants' level of object concept. *Child Development,* June 1972; Gratch, G. A study of the relative dominance of vision and touch in six-month-old infants. *Child Development,* June 1972.

29-DE-2 TRANSITIVITY WITH SOCIAL OBJECTS

Investigator(s): Kenneth D. Feigenbaum, Ph.D., Professor, Department of Psychology, Antioch College, Washington-Baltimore Campus, Columbia, Maryland 21043.

Purpose: To determine the relationship between concrete transitivity employing physical concepts and social transitivity employing social objects.

Subjects: 112 children: 45 kindergarten students, 23 first graders, and 44 third graders.

Methods: The children were divided into two groups according to the contexts of social or physical tasks. Half of the subjects was tested for transitivity using colored sticks; and the other half performed discrimination, seriation, and transitivity tasks using photographs that displayed graduated degrees of happiness.

Findings: Results indicated little age difference for success with both social and physical transitivity. Older subjects, however, displayed a significantly greater ability with seriation than did the younger subjects. A second test was conducted to add tasks intermediate between the concrete and social parameters. The children generally did poorer on the second series of tests than on the first. It was found that transitivity tasks that employed fewer items were easier to solve than those with more items.

Duration: September 1970-September 1971.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

29-DF-1 THE EFFECT OF PRETRAINING ON A PIAGETIAN MEMORY TASK

Investigator(s): Wayne V. Adams, Ph.D., Assistant Professor, Department of Psychology, Colgate University, Hamilton, New York 13346.

Purpose: To ascertain if there is an effect of same-different discrimination pretraining on preschool children's recall of a visual array of seriated lines.

Subjects: 30 white boys and girls, age 4-1/2, who attend nursery school.

Methods: The subjects are divided into three groups: (1) a pretraining group that receives discrimination pretraining before a memory task, (2) an irrelevant pretraining group that receives discrimination pretraining on irrelevant stimuli before a memory task, and (3) a group that receives only a memory task. The subjects are seen individually and presented with a visual array that consists of a seriated set of red licorice on a bright yellow background. The subject is asked to rebuild what he saw 1 week later and 6 months later.

Findings: Preliminary results indicate that the pretraining task has no effect on memory.

Duration: November 1971-January 1972.

29-DG-1 THE RELATION OF VISUAL IMAGERY TO PIAGET'S STAGES OF COGNITIVE DEVELOPMENT

Investigator(s): Kathleen Preston, Ph.D., Assistant Professor, Department of Education, Humboldt State College, Arcata, California 95521.

Purpose: To investigate whether high visual imagery facility or spatial ability facilitates children's performance on cognitive development tasks, especially during periods of consolidation of concrete or formal operations.

Subjects: 25 boys and 25 girls from each of four grades: grade 1, age 6; grade 4, age 9; grade 6, age 11; and grade 10, age 15. The subjects were drawn from classrooms in a predominantly white middle class community.

Methods: Four group-administered tests of spatial ability were given to all subjects. Subsequently, subjects were individually given three Piagetian tasks: the mountains task, and two formal operations tasks (pendulum and displacement). Composite imagery scores, based on the spatial ability tests, were correlated with scores on Piagetian tasks. Analyses of covariance were done on the Piagetian tasks, using three levels of imagery and sex as factors.

Findings: Imagery scores were positively related to Piagetian task scores in all grades. Significant relationships, however, were found only for the mountains task in all grades and for the formal operations tasks only in grades 4 and 10, which were designated as periods of consolidation.

Duration: November 1970-December 1971.

29-DG-2 AUDITORY VERSUS VISUAL DISCRIMINATION LEARNING IN CHILDREN

Investigator(s): Dale S. Montanelli, Ph.D., Assistant Professor; and Barbara Beck, B.A., Department of Psychology, University of Illinois, Urbana, Illinois 61801.
Purpose: To discover if children can learn a simple discrimination task faster by looking or listening, and to compare boys and girls on similar discrimination tasks.
Subjects: 40 nursery school children: 20 boys and 20 girls, age 4.
Methods: The children participated in successive two-choice discrimination learning tasks. Each child either saw unidimensional or multidimensional pictures or heard undimensional or multidimensional phrases. The child chose which button would produce a marble after each trial. The particular picture was a clue that informed the child which button to push.
Duration: December 1971-February 1972.
Cooperating group(s): Children's Research Center Nursery School, Urbana, Illinois.

29-DH-1 LANGUAGE DEVELOPMENT: STRUCTURE AND FUNCTION

Investigator(s): Lois Bloom, Ph.D., Associate Professor, Teachers College, Columbia University, 525 West 120th Street, New York, New York 10027.
Purpose: To describe the development of complexity in children's speech in terms of cognitive and linguistic development and learning.
Subjects: Five white, middle class, firstborn children: 2 boys and 3 girls, ages 16 months to 3 years.
Methods: Video- and audiotape recordings will be made of the child interacting with the investigator, the child's mother, and a group of toys. Analysis is descriptive and focused on different features of language development at different points in development.
Duration: September 1971-July 1974.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.
Publications: Bloom, L. *Language development: Form and function in emerging grammar.* Cambridge, Massachusetts: M.I.T. Press, 1970.

29-DH-2 THE VOCABULARY ACQUISITION OF MONOLINGUAL AND BILINGUAL CHILDREN

Investigator(s): Walburga Von Raffler Engel, Ph.D., Visiting Professor, Department of Linguistics, University of Ottawa, Ottawa 2, Ontario, Canada.
Purpose: To study the language acquisition of monolingual and bilingual children.
Subjects: 34 bilingual French and English children, ages 5 to 7, at the University of Ottawa Child Study Center; and 30 monolingual French children, ages 5 to 7, at the Ecole Reboul, Hull, Quebec.
Methods: The children are told a story with a new (rare or invented) noun, adjective, and verb. Each new word is repeated five times within the same story. All new items are in the same syntactic context, but in a different context for each story.
Duration: September 1971-May 1972.
Cooperating group(s): University of Ottawa Child Study Center.
Publications: Preliminary report in *Contributions Canadiennes a la linguistigne appliquee.* Ottawa: University of Ottawa Press, 1971.

29-DH-3 BETHLEHEM LUTHERAN COTTAGE SCHOOL

Investigator(s): T. Bentley Edwards, Ph.D., Professor, School of Education, University of California at Berkeley, Berkeley, California 94720.
Purpose: To investigate the effects of a language acquisition program on ghetto children.
Subjects: 15 Negro boys and 15 Negro girls, ages 3 to 4, whose mothers are on welfare and live in a ghetto.
Methods: Volunteer undergraduates in the program met with ghetto children on a one-to-one basis to enhance the child's primary language acquisition through conversation. The children were tested at the beginning and end of the experience with the Stanford-Binet Intelligence Scale and the Peabody Picture Vocabulary Test. They are being followed in regular school.
Findings: In the beginning, scores on the Peabody lagged far behind the Stanford-Binet scores. After 1 year, the scores on the Peabody increased dramatically to match the scores on the Stanford-Binet.
Duration: May 1968-June 1972.
Cooperating group(s): California State Department of Education.

Personality

29-EA-1 HOME-SCHOOL-COMMUNITY SYSTEMS FOR CHILD DEVELOPMENT

Investigator(s): Jarvis Barnes, Ed.D., Assistant Superintendent, Research and Development Division, Atlanta Public Schools, Atlanta, Georgia 30303.
Purpose: To strengthen children's ability to cope with problems in living, and to prevent the development of maladaptive behavior.
Subjects: 500 boys and girls, ages 5 to 9, in kindergarten through grade 3; and 500 children in a matched control group from two experimental and two control schools.
Methods: A behavioral science curriculum is being developed for the pupils. It will include concepts pertaining to comprehension of causal thinking, the prevention of deviant behavior, and the reduction of emotional stress. Another curriculum is being developed in order to improve parents' functioning as parents. Of the four elementary schools participating, one school and its matching control school are in a low socioeconomic area; the other school and its control school are in a middle to upper socioeconomic area. Pre- and posttest data will include measures of self-concept, personality, causal thinking, achievement, and school and classroom behavior. An analysis of covariance will measure changes in adjustment.
Duration: June 1970-May 1973.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-EA-2 A PSYCHOEDUCATIONAL SCALE FOR CHILDREN AGES 1 TO 4 ½ YEARS

Investigator(s): Eric Schopler, Ph.D., Associate Professor, Psychiatry and Psychology, School of Medicine, University of North Carolina, Chapel Hill, North Carolina 27514.

Purpose: To construct a scale that will produce a profile of a young child's relative standing in various areas of functioning.
Subjects: 37 children seen at diagnostic evaluations at the Child Research Project (TEACH North Carolina Memorial Hospital); and 80 normal children, ages 1 to 4 1/2 years.
Methods: Items selected for the scale were chosen and used with normal and psychotic populations. Items are arrayed in rough chronological order and grouped in four major categories: social-emotional, sensory modalities, motor development, and cognitive functions. Each major area has three or four subcategories. A larger scale standardization is planned. The profile produced by the proposed scale may be used to plan more effective therapy; and to indicate areas that need improvement, areas a child is ready for, and areas that are his strong points. It may also be used to measure improvement after educational therapy.
Duration: September 1970-June 1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-EA-3 THE LONEY DRAW-A-CAR TEST: A NEW VEHICLE FOR THE ASSESSMENT OF CHILDREN

Investigator(s): Jan Loney, Ph.D., Chief, Department of Child Psychology, Child Psychiatry Service, College of Medicine, University of Iowa, 500 Newton Road, Iowa City, Iowa 52240.
Purpose: To explore the personality, intellectual, and visual motor correlates of the Loney Draw-A-Car Test (LDACT).
Subjects: 600 normal school children, ages 5 to 12; and 500 child psychiatric patients, ages 4 to 16, of both sexes.
Methods: Data on LDACT, Draw-A-Person (DAP), Bender Gestalt Test for Young Children, Wechsler Intelligence Scale for Children (WISC), Wechsler Preschool and Primary Scale of Intelligence (WPPSI), and various behavioral ratings are being interrelated in different ways. The LDACT appeals primarily to boys.
Findings: Pearson correlations of .60 to .70 were found between provisional LDACT scores and WISC, Bender, and DAP (Harris) scores. LDACT measures of self-esteem and impulse control related predictably to age and sex.
Duration: 1970-continuing.
Publications: *Journal of Personality Assessment*, 1971, 35, 265-274.

29-EB-1 A COMPARATIVE STUDY OF THE SELF-CONCEPTS OF PROMOTED AND NONPROMOTED CHILDREN

Investigator(s): Nancy Jo Kaufman, M. A., Palos Verdes Penninsula Unified School District, 38 Crest Road, West, Rolling Hills, California 90274.
Purpose: To compare the self-concepts of children who have been regularly promoted to those who have been retained but were of equal achievement at the time of nonpromotion; and to determine if the self-concepts of children who have been retained in the first grade are better than the self-concepts of those retained in the third grade.
Subjects: 82 students in the Torrance Unified School District: 19 fourth graders retained in

first grade; 33 regularly promoted fifth graders who were matched with fourth graders for achievement in first grade; 12 fourth graders retained in third grade; and 18 regularly promoted fifth graders who were matched with the second group of fourth graders for achievement in third grade.

Methods: Subjects were given the Piers-Harris Children's Self-Concept Scale. A total score was computed for each child. Cluster scores were computed for six factors: behavior, intellectual and school status, physical appearance and attributes, anxiety, popularity, and happiness and satisfaction.

Findings: The retention in first grade had no significant effect on student self-concept. Retention in third grade may negatively affect the self-concept; particularly, behavior, anxiety, intellectual and school status; popularity, and happiness and satisfaction.

Duration: January 1971-June 1971.

29-ED-1 THE ROLE OF VERISIMILARITY OF AN AGGRESSIVE CARTOON ON CHILDREN'S PLAY

Investigator(s): Samuel M. Cameron, Ph.D., Associate Professor; and Debbie Roy, Department of Psychology, Beaver College, Glenside, Pennsylvania 19038.

Purpose: To determine whether verisimilarity in an aggressive cartoon elicits aggression in children's play.

Subjects: 45 kindergarten and nursery school students: 30 boys and 15 girls, mean age 69.2 months, from middle socioeconomic classes.

Methods: The child was exposed to one of three treatments: (1) exposure to a humanoid aggressive cartoon, (2) exposure to a nonhumanoid aggressive cartoon, or (3) exposure to a nonaggressive cartoon. The child was then mildly frustrated, and his play was observed in a controlled situation and scored for aggressiveness.

Findings: The children exposed to a humanoid aggressive cartoon produced significantly more aggressive play responses than children who viewed either a nonhumanoid aggressive cartoon or a nonaggressive cartoon.

Duration: June 1971-September 1971.

29-ED-2 PERSONALITY AND PROBLEM BEHAVIOR OF NORMAL THIRD GRADE CHILDREN

Investigator(s): Charles Brody, M.D.; and Robert Plutchik, Ph.D., Director, Evaluation Research Program, Bronx State Hospital, 1500 Waters Place, Bronx, New York 10361.

Purpose: To study the relationships among personality, problem behavior, IQ, and class attendance of a group of normal third grade children.

Subjects: 65 children randomly selected from the third grades of a school district.

Methods: A problem behavior checklist was developed and personality ratings were made by teachers on 12 traits. The 12 traits were based on Plutchik's theory of emotions. Measures of personality, problem behavior, IQ, and class attendance were obtained for the subjects and correlations were computed for each measure.

Findings: Two clusters of personality traits and overt behavior were identified: the withdrawn type and the impulsive type. These indices correlated positively with the number of problem behaviors.

Duration: May 1971-completed.
Cooperating group(s): Elmont School District.

29-EE-1

EFFECTS OF MATERNAL DRUG ADDICTION ON THE PHYSICAL AND MENTAL DEVELOPMENT OF THE NEWBORN INFANT AND ON THE FUTURE GROWTH AND DEVELOPMENT OF THE CHILD

Investigator(s): Carl Zelson, M.D., Professor, Director of Nurseries; and Edward Wasserman, M.D., Chairman and Professor, Department of Pediatrics, New York Medical College, Metropolitan Hospital, Room 5B22, 1901 First Avenue, New York, New York 10019.
Purpose: To observe and care for, over a prolonged period, infants born to drug addicted mothers.
Subjects: 50 to 60 neonates born of drug addicted mothers at Metropolitan and Flower and Fifth Avenue Hospitals; and a control sample of 60 to 75 neonates born of normal mothers.
Methods: Both groups of children will be given normal nursery routine care but will be more closely observed. Urines of the infants will be tested for morphine sulfate, quinine, and other drugs that the mothers may have ingested. Blood magnesium levels will be studied and cytogenetic studies will be made in an attempt to relate changes in growth and development to chromosomal changes. Studies will be made of the sleep patterns and sweat responses of the infants. Metabolism of biogenic amines will be studied in an attempt to relate this to the onset of the withdrawal syndrome. A 5-year follow-up is planned to follow the regular 3-year study.
Duration: July 1971-June 1974.
Cooperating group(s): School of Nutrition, Cornell Medical School.
Publications: *Pediatrics*, 1971, 48, 178.

29-EE-2

DRUG ABUSE IN PREGNANCY AND DANGER TO NEWBORN

Investigator(s): Milton S. Saslaw, M.D., Director; Richard A. Morgan, M.D., Assistant Director; Robert E. Laurie, M.D., Chief, Office of Consumer Care; Hector O. Garcia, M.D., Chief Pediatrician and Coordinator, Children and Youth Project; Dorothy J. Hicks, M.D., Coordinator, Maternal and Infant Project; and Jose G. Marmol, M.D., Coordinator, Family Planning Project, Dade County Department of Public Health, 1350 N. W. Fourteenth Street, Miami, Florida 33125.
Purpose: To produce baseline data on the effects of drug abuse on mothers and their offspring during pregnancy; and to determine needs, methods, and rationale for appropriate management of the problem.
Subjects: 750 pregnant women without age limit, parity range, or other limitations; who use or do not use 18 classifications of unprescribed drugs.
Methods: Subjects are divided into three groups of 250 subjects who represent (1) drug abusers (women who used unprescribed drugs at least once during pregnancy or more than twice during the year prior to pregnancy), (2) nonusers (women who have not used unprescribed drugs during the year prior to pregnancy), and (3) nonadmitters of drug use. Unprescribed drugs are those listed by the Bureau of Narcotics and Dangerous Drugs and

other drugs taken without prescription and medical advice. Data from expectant mothers will be collected by social worker interviews at the maternity and infant care clinics. Neonates will be examined in the delivery room and carefully assessed for withdrawal symptoms, neurological impairment, and physical defects. Comparative data will be analyzed to determine the significance of drug use in the mother, its significance to pregnancy, its effect on the pregnancy outcome, and its effect on the offspring.

Duration: July 1971-June 1972.

Cooperating group(s): Division of Research, Maternal and Child Health Service, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Bureau of Drugs, Food and Drug Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Florida Department of Health and Rehabilitative Services, Division of Health; Dade County Department of Public Health; School of Medicine, University of Miami.

29-EF-1 CHANGES IN DIRECTION AND INTENSITY OF AFFECT IN THE REACTION OF THE YOUNG CHILD TO THE STRANGER AT THREE AGE LEVELS

Investigator(s): Ruth Shaffran, M.Ps., Graduate Student; Monique Duguay, B.Ph.; and Marc Prevost, Universite de Montreal, Case Postale 6128, Montreal 101, Quebec, Canada.

Purpose: To determine if the reaction of infants to strangers is stable; an assumption that underlies the literature on the topic.

Subjects: 60 healthy infants, 30 of each sex, in three age groups: 8, 10, and 12 months old, who live at home with both parents.

Methods: Three different investigators visit each infant in his home three times. Each investigator conducts a standardized 3-minute, four-phase (far, near, touch, and pick-up) test. All subjects' reactions are tape recorded as they occur and are later transcribed for scoring. Comparisons are made of the infants' reactions to each visitor.

Findings: Half of the subjects have been seen. Findings indicate that the negative or fear reaction tends to be unstable and dependent on specific factors, rather than a generalized reaction specific to a certain age. What appears to be a constant phenomenon is an attitude of wariness in the face of a stranger.

Duration: May 1971-May 1972.

Cooperating group(s): The Canada Council.

29-EG-1 RELATION OF CREATIVITY AND FIELD INDEPENDENCE TO OTHER ABILITIES AND PERSONALITY FACTORS

Investigator(s): Philip E. Vernon, Professor, Department of Educational Psychology, University of Calgary, Calgary, Alberta, Canada.

Purpose: To investigate the relationship of creativity and field independence to other abilities and personality factors of junior high school children.

Subjects: 198 boys and 189 girls in grade 8 in Calgary junior high schools.

Methods: Several tests of creativity and field independence were administered as well as reference tests and tests of interests, attitudes, and personality characteristics. Verbal ability was held constant in analyzing the correlates of divergent thinking tests, and intelligence was held constant in analyzing field dependence.

Findings: In a normal adolescent population, general or verbal abilities accounted for large proportions of the variance of these constructs, though they also yielded consistent factors. More significant findings were obtained for divergent thinking tests given under relaxed, rather than formal, testing conditions. Field independence was found to coincide with general spatial factors. Results for both field independence and creativity differed markedly between the sexes.

Duration: November 1968-completed.

Publications: *The Western Psychologist*, 1970, Monograph No. 2. *British Journal of Educational Psychology*, 1971, 41.

29-EG-2 PARENTAL FACTORS RELATED TO ORIGINALITY IN CHILDREN: THE TORRANCE TEST

Investigator(s): Joan Aldous, Ph.D., Associate Professor, Department of Sociology, University of Minnesota, 1014 Social Sciences Building, Minneapolis, Minnesota 55455.

Purpose: To examine children's backgrounds for factors that relate to their creativity.

Subjects: 55 children in grade 3, who are from unbroken homes and live in urban areas.

Methods: The children's socioeconomic class, ordinal position, family size, and their mother's occupational status will be related to their performance on the Torrance Test.

Findings: Results indicate that there is no sex difference on the test performance. The children whose mothers are employed in higher prestige occupations than their fathers do less well on the Torrance test.

Duration: September 1965-September 1972.

Cooperating group(s): National Institutes of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-EG-3 PARENTAL FACTORS RELATED TO ORIGINALITY IN CHILDREN: AN OBSERVATION STUDY

Investigator(s): Joan Aldous, Ph.D., Associate Professor, Department of Sociology, University of Minnesota, 1014 Social Sciences Building, Minneapolis, Minnesota 55455.

Purpose: To examine parental behaviors that are related to children's originality on tasks.

Subjects: 30 boys and 30 girls and their parents, who are members of the middle class.

Methods: The mother, father, and child were brought into a room with a one-way vision window. Their behaviors were observed while the child performed four tasks, three of which permitted original solutions. The behaviors of the family triads (with children scoring high, middle, and low in originality on each task) were compared.

Findings: Results indicate that the mother's directiveness of the child has a negative effect on his originality, while the fathers' directiveness of the girls does not have this effect.

Duration: September 1969-September 1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

Social

29-FA-1 INDIVIDUAL PERCEPTION OF GROUP STRUCTURE

Investigator(s): Dennis R. Musselman, Ph.D., Professor, Department of Psychology; and Roy Tucker, M.A., Professor, Department of Mathematics, Humboldt State College, Arcata, California 95521.
Purpose: To investigate the accuracy of the individual child's perception of group structure.
Subjects: Approximately 250 children enrolled in kindergarten through grade 8.
Methods: Subjects were divided into groups of six, seven, and eight children. The individual's perception of the group structure was represented by the concept of a multidimensional vector space in which each person is a point. The children's similarities judgments located points in the space. Predictions concerning the sociometric choices of other group members were derived from the space of each individual. (For example, a child will choose the individual most similar to himself.) Accuracy measures of person perception reflected the correspondence between an individual's perceptual space and the choices of others.
Findings: A regular increase was found in the subjects' accuracy scores as they grew older. The children who achieved high accuracy scores among groups of familiar peers tended to achieve high accuracy scores among groups of unfamiliar peers. It was also found that each child's perceptual space more accurately predicts his own choices than the social choices of others.
Duration: January 1970-December 1973.
Cooperating group(s): Arcata Elementary School; Jacoby Elementary School.

29-FA-2 THE SOCIAL WORLDS OF EARLY CHILDHOOD

Investigator(s): Norman K. Denzin, Ph.D., Associate Professor, Department of Sociology, University of Illinois, Urbana, Illinois 61801.
Purpose: To study early childhood from children's perspective as seen in their play, work, and games; in homes, parks, and preschools.
Subjects: Preschool children, ages 1 to 6.
Methods: An interactionist-observational method is employed. Selected interviews and direct observations were made, and a content analysis was made of the child's autobiography pertaining to early childhood and family experiences. Previously published case histories were reanalyzed, and a selective analysis was made of comparative historical and anthropological accounts of child socialization.
Duration: 1969-continuing.

29-FA-3 ATTACHMENT AND ITS RELATION TO IMITATION

Investigator(s): Willard W. Hartup, Ed.D., Professor; and Director, Institute of Child Development, University of Minnesota, Minneapolis, Minnesota 55455.

Purpose: To explore the relation of social attachments to the child's responsiveness to modeling influences.

Subjects: Infants and preschool children.

Methods: Situational tests will be used throughout the study.

Duration: September 1971-December 1972.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-FA-4 PROJECT AWARE

Investigator(s): Phyllis T. Elardo, Ph.D., Research Coordinator; and Bettye M. Caldwell, Ph.D., Director, Center for Early Development and Education, University of Arkansas, 814 Sherman, Little Rock, Arkansas 72202.

Purpose: To create a school environment which facilitates the development of children; to make them aware of themselves and others; and to facilitate role taking and coping with problem situations.

Subjects: 48 boys and 28 girls, ages 6 to 9, from low income families, who attend the Center for Early Development and Education.

Methods: The subjects were divided equally into experimental and control groups. Classroom meetings with the experimental group are scheduled four times a week for 25 minutes; discussions are centered on interpersonal development. The program will be evaluated by the Devereux Elementary Behavior Rating Scale, playground observation, achievement test data, and clinical assessment.

Duration: September 1971-June 1972.

Cooperating group(s): Office of Child Development, U. S. Department of Health, Education, and Welfare; University of Arkansas, Fayetteville; Little Rock public schools.

29-FA-5 AN EXPLORATORY STUDY OF THE CHILD'S COMPREHENSION OF SOCIAL INTERACTION

Investigator(s): Kenneth D. Feigenbaum, Ph.D., Professor, Department of Psychology, Antioch College, Washington-Baltimore Campus, Columbia, Maryland 21043.

Purpose: To determine the cognitive parameters that influence a child's comprehension of social interaction; specifically, to determine the utility of applying decentering as a construct to help explain the child's understanding of social situations.

Subjects: 32 boys and 13 girls, ages 3 to 9.

Methods: The subjects were individually shown 12 videoscenes of interpersonal situations that depicted either peer-peer, peer-adult, or adult-adult interaction in either a cooperative or an uncooperative situation. While the subject viewed each scene, his behavior was videotaped. After each film was presented, the subject was questioned about the emotions and actions displayed in the scene. The children's responses, including their behavior while watching the scene and their comprehension revealed during questioning, were transcribed on a checklist and coded by age and sex.

Findings: Scenes in which abstract themes were verbalized proved more difficult for younger subjects to understand than either scenes with concrete themes verbalized or concrete themes acted out. Scenes of uncooperative action were significantly better understood by younger subjects than scenes of cooperative action. Comprehension was generally related to the subjects' ages.

Duration: September 1970-September 1971.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

29-FB-1 A THEORY OF SEX ROLE DEVELOPMENT IN THE FEMALE CHILD

Investigator(s): V. Jean Saunders, M.A., Student, Department of Educational Psychology, California State College at Long Beach, Long Beach, California 90801. Address correspondence to: 524 Paseo de la Playa, Redondo Beach, California 90277.

Purpose: To determine if (1) the differential fantasy pattern found in adults has developed in elementary school age children, (2) identification with the female pattern in girls occurred around the fifth grade level, and (3) there were any relationship between a strong female pattern and self-esteem.

Subjects: 194 children, ages 8 to 14, in grades 3, 5, and 8; from middle to upper middle class families; average IQ: 110-119.

Methods: The instrument used to measure the fantasy patterns of boys and girls for the study was a modified version of the Thematic Apperception Test (TAT) or Deprivation-Enhancement (DE) Test, consisting of two pictures of a bullfight and a trapeze scene. (This instrument was used in 1966 and 1968 to measure the fantasy patterns of adults.) Stories written in response to the pictures were scored in terms of deprivation and enhancement units and the sequence of these units in the story. The DE Test was administered as a group test to each class. The children were asked to write a story about each picture and to answer (1) What is happening? Who are the people? (2) What has led to this situation? What has happened in the past? (3) What is being thought? What is wanted? By whom? and (4) What will happen? A 50-item Self-esteem Inventory was used to measure the child's perception of himself in relation to peers, parents, self, and school. The Self-esteem Inventory was administered to each class as a group a week after completion of the DE Test. The significance of difference between group means was determined by a t-test between male and female DE stories and for comparison among female stories at the three grade levels. Results at or below the .05 level were considered significant. The chi-square test of significance was used to determine statistical significance between DE story scores and self-esteem scores.

Findings: Significant sex differences were found between the fantasy patterns of boys and girls at the fifth and eighth grade levels for stories written in response to the trapeze picture but not the bullfight picture, although the group mean of the girls' stories was in the direction of the female pattern for both pictures. Comparison of female stories at the three grade levels showed a shift at the fifth grade level in the direction of the female pattern for the trapeze picture, but not for the bullfight picture. Girls, as a group, had higher mean self-esteem scores than the boys at all three grade levels, although the difference was significantly smaller at the eighth grade level. There was no significant relation between DE test patterns and self-esteem scores. The findings suggest that internalization of the female pattern in girls takes effect sometime before the eighth grade, and there is evidence that a pronounced shift towards the pattern occurs around grade 5.

Duration: September 1970-June 1971.

29-FC-1 EFFECTS OF TELEVISION ADVERTISING ON CHILDREN AND ADOLESCENTS

Investigator(s): Scott Ward, Ph.D., Assistant Professor, Graduate School of Business Administration, Harvard University, Boston, Massachusetts 02163.

Purpose: To determine the short-term effects of television advertising on the cognitive and behavioral development of young viewers.

Subjects: 1,094 white children, ages 12 to 17; 150 children, ages 5 to 12, and their parents; 100 black children, ages 12 to 17; and 20 children, ages 5 to 12, who took part in clinical research.

Methods: The research was divided into three parts and a cross-sectional analysis was made of the data: (1) An attitudinal questionnaire was administered to the adolescents. (2) A survey was conducted of the commercial watching behavior of the 5- to 12-year-old children. Mothers observed the children's watching behavior for 6 to 10 hours of normal viewing. (3) Clinical interviews were held with four groups of five 5- to 12-year-olds.

Duration: June 1970-June 1971.

Cooperating group(s): Marketing Science Institute, Cambridge, Massachusetts.

29-FC-2 TEEN-AGE DRUG USE

Investigator(s): Solbritt E. Murphy, M.D., Assistant Professor; and Robert W. Deisher, M.D., Department of Pediatrics, University of Washington, Seattle, Washington 98105.

Purpose: To survey knowledge of use, extent of use, and attitudes of adolescents towards illicit drug use in a suburban population.

Subjects: 736 junior high and high school students, ages 12 to 18, 50 percent male and 50 percent female, enrolled in a northwestern suburban school district of Seattle.

Methods: Subjects filled in a questionnaire specifically designed for this age group. The questionnaires were administered in school.

Findings: The subjects exhibited an extensive knowledge of illicit drug use and widespread experimentation. Multidrug use is more prevalent than the use of one drug only. Subjects' attitudes towards drug use correspond closely to their actual use of drugs.

Duration: Spring 1969-summer 1971.

Cooperating group(s): The school district's research department.

29-FC-3 BEHAVIOR MODIFICATION OF EATING SKILLS

Investigator(s): Erwin Friedman, Ph.D., Executive Director; and Mark A. Kravik, B.A., Behavior Modification Program Director, National Children's Center, Inc., 6200 Second Street, N.W., Washington, D.C. 20011.

Purpose: To study the effects of a behavior modification training program on children whose eating behavior was inappropriate or unacceptable.
Subjects: 100 handicapped residential and day care students, ages 6 to 21, enrolled at the National Children's Center.
Methods: The subjects' handicaps included emotionally disburbing autism, brain damage, and profound, severe, and moderate retardation. The principles of operant conditioning were used to develop a six-step complex behavior chain. Starting with the sixth step, each step was taught using successive approximation, fading, and reinforcement techniques.
Findings: Children who initially ate appropriately 35 percent of the time, ate appropriately 80 percent of the time after they had been taught the eating chain. After a *reversal period* (noncontingent reinforcement) the children engaged in appropriate eating behavior 52 percent of the time, and later, their appropriate eating behavior increased to 77 percent of the time when the reinforcement procedures were reinstated.
Duration: October 1970-May 1971.

29-FC-4 IS PUNISHMENT A WAY TO CURE HIGH SCHOOL STUDENTS OF SMOKING?

Investigator(s): Virginia Levanas, M.S., R.N., School Nurse; and Claude Ragsdale, M.A., Assistant Principal, Student Services, Torrance High School, Torrance Unified School District, 2335 Plaza del Amo, Torrance, California 90509.
Purpose: To provide a positive approach to discipline to keep students in school.
Subjects: 88 boys and girls in grades 9 and 10.
Methods: A 4-day antismoking clinic was offered in lieu of suspension for students apprehended smoking in high school. Monthly group sessions were offered in a comfortable setting. The American Cancer Society Smoker's Self-Testing Kit was used to help the students understand their reasons for smoking as well as the effects of smoking on health. Films, discussions, and mild confrontation techniques were used.
Findings: Students were found to want to remain in school. Of the 88 students given a choice of suspension or attendance, only five chose suspension. Only four of the 83 remaining students failed to attend the clinic and were suspended. Most students had parents who smoked. Participants began smoking between ages 11 and 13. Of the 79 students who completed the clinic (11 girls and 68 boys), 75 were never caught smoking again. The students gained insights regarding their feelings about giving up smoking, the problems involved, and how they would cope with the problems.
Duration: December 1970-June 1971.
Cooperating group(s): American Cancer Society.

29-FC-5 YOUTH SURVEY

Investigator(s): Victor A. Gelineau, Ph.D., Director, Program Evaluation; Malcolm Johnson, M.A., Director of Research; and Doris Pearsall, M.A., Supervisor of Research, Division of Drug Rehabilitation, Department of Mental Health, Commonwealth of Massachusetts, 80 Boylston Street, Boston, Massachusetts 02116.
Purpose: To determine the extent and nature of the use of psychotropic drugs among high school students in Massachusetts, and to determine what behaviors and attitudes are correlated with drug use.

Subjects: 15,000 students in grades 9 to 12 in 136 Massachusetts high schools.
Methods: A probability sample of schools was drawn by mental health region and by size and type of community. The instrument to be used is an anonymously administered questionnaire that has been field tested in six pilot studies. Drug users of various types and nondrug users in the sample population will be compared on a number of demographic, behavioral, and attitudinal dimensions.
Findings: Pilot studies show overall drug use among high school students to be around 20 to 25 percent with a linear progression by age. Seniors show as high as 50 percent drug use. Drug use appears to correlate highly with other youth problems.
Duration: September 1971-September 1972.

29-FE-1 ASSESSING THE PERSONAL AND SOCIAL IMPACT OF A RECENTLY ESTABLISHED NATIONAL TELEVISION SYSTEM

Investigator(s): Thomas P. Dunn, Ph.D., Assistant Professor; and Bragi Josepsson, Ph.D., Associate Professor, Department of Sociology, Western Kentucky University, Bowling Green, Kentucky 42101.
Purpose: To investigate the effects of television on children, adults, and families; particularly (1) the possible relationship between television viewing and deviance; and (2) selected modernization variables such as empathy, receptivity to change, national stereotyping, and dogmatism.
Subjects: 1,200 school children, 600 adults, and 350 families. All subjects are residents of Iceland.
Methods: Half of the subjects in each category had no previous exposure to television, and the other half had been television viewers for approximately 4 years. Questionnaire and interview data were collected from the subjects, from 80 school teachers, and from 100 criminals and delinquents. Numerous government, law enforcement, and media officials were interviewed. Selected deviancy statistics including divorce rates, rates of commitment of children to homes for delinquents, and crime rates were collected in order to compare the possible relationships of these factors to the development of television in Iceland.
Duration: February 1971-February 1972.
Cooperating group(s): National Science Foundation.

29-FE-2 SATURDAY CHILDREN'S TELEVISION

Investigator(s): F. Earle Barcus, Ph.D., Professor, Communication Research Division, School of Public Communication, Boston University, 640 Commonwealth Avenue, Boston, Massachusetts 02215.
Purpose: To describe and analyze a sample of children's network and local television programs and advertising.
Methods: Nineteen hours of children's television programs were videotape recorded and analyzed. By means of specially designed monitoring forms, programs were viewed and studied for extent of violence, subject matter, program origin, style, and composition of characters. Advertising content was analyzed for techniques of appeal in selling products.
Findings: Results indicated that 19 percent of the television time was devoted to commercial announcements; 89 percent of the programs was entertainment; 62 percent of the programs was animated film; 406 commercial messages were given in a total of 1,125 minutes with an

average of one commercial every 2.8 minutes; 64 percent of dramatic format programs dealt with crime, the supernatural, or interpersonal rivalry; 30 percent of the stories was saturated with violence; and 71 percent had at least one instance of human violence. Commercials were found to be uninformative on price and material of the product.

Duration: May 1971-July 1971.

Cooperating group(s): Action for Children's Television.

Publications: A report, *Saturday children's television*, July 1971, is available from Action for Children's Television, 46 Austin Street, Newton Centre, Massachusetts 02259.

SPECIAL GROUPS OF CHILDREN

Physically Handicapped

29-GB-1 FOCUS ON PRESCHOOL DEVELOPMENTAL PROBLEMS

Investigator(s): Thomas Hockman, M.A., Director; Dennis L. Darner, M.A., Assistant Director; and David A. Bane, M.A., Educational Diagnostician, Focus on Preschool Developmental Problems, Stratton Annex, 2460 Paseo Boulevard, Colorado Springs, Colorado 80907.

Purpose: To make a differential diagnosis of the developmental abnormalities in preschool children, and to initiate an educational treatment program that will enable the child to overcome the effect of the developmental problems.

Subjects: Approximately 65 boys and girls, ages 3 to 7, who show a developmental lag in either or both visual and auditory perception.

Methods: Forty subjects are enrolled in special classes and 25 subjects are treated at home. Parental judgments, teacher progress reports, standardized test results, and an original educational diagnostic evaluation procedure will be used to diagnose developmental abnormalities.

Duration: August 1969-June 1972.

Cooperating group(s): School District # 11, Research Department, Colorado Springs, Colorado; Office of Education, U. S. Department of Health, Education, and Welfare.

29-GC-1 COMMUNICATION SKILLS IN DEAF AND HEARING CHILDREN

Investigator(s): Harry W. Hoemann, Ph.D., Assistant Professor, Department of Psychology, Bowling Green State University, Bowling Green, Ohio 43402.

Purpose: To assess the quality and accuracy of profoundly deaf children's language and communication behavior, especially their manual communication skills.

Subjects: The study is cross-sectional in nature; subjects range in age from 5 years to adulthood.

Methods: Three areas of competence will be evaluated: the size of the sign language lexicon available to deaf children, communication accuracy in peer-to-peer communication, and spontaneous communication in natural settings. The procedure employed most frequently will involve two subjects seated opposite each other at a table separated by a screen. One subject acts as a sender and describes referents so that a peer receiver can select them from an array. Pictures, objects, and events will be used as subject matter for the referent descriptions. In some instances the perspective of the receiver will have to be considered, since the picture may appear upside down to a receiver sitting opposite the sender. The quality of messages, the accuracy of the communication, and the receiving scores are derived.

Findings: A 3-year performance lag on the part of school age deaf children suggests that deafness constitutes a communication handicap even when manual methods are used to communicate. Scores derived from formal communication tasks may underestimate the ability of deaf children to communicate informally.
Duration: September 1970-August 1973.
Cooperating group(s): National Institute of Neurological Diseases and Stroke, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-GC-2 THE PROGRAMMED SPEECH IMPROVEMENT SYSTEM

Investigator(s): Rolland J. Van Hattum, Ph.D., Chairman, Department of Communication Disorders, New York State University College at Buffalo, 1300 Elmwood Avenue, Buffalo, New York 14222.
Purpose: To develop a taped therapy program (administered by aides under a speech clinician's supervision) to improve children's defective speech sounds.
Subjects: 961 children in grades 1 to 6 with mild or moderate articulation problems.
Methods: Pre- and posttests were administered using the Templin-Darley Screening and Diagnostic Tests of Articulation, the Goldman-Fristoe-Woodcock Tests of Auditory Discrimination, and the McDonald Deep Test of Articulation.
Findings: A 47 percent correlation rate was measured. Significant improvement was observed (at the 1 percent level) on articulation and auditory discrimination.
Duration: September 1970-June 1971.
Cooperating group(s): New York State Education Department.

29-GE-1 LEARNING OF PITCH CONTROL BY PROFOUNDLY DEAF CHILDREN

Investigator(s): Arthur Boothroyd, Ph.D., Director of Research; and Mary Decker, Ed.M., Research Teacher, Clarke School for the Deaf, Round Hill Road, Northampton, Massachusetts 01060.
Purpose: To compare the effectiveness of instrumental and noninstrumental training to teach deaf children simple pitch control tasks.
Subjects: 20 profoundly deaf children (average losses in excess of 95db ISO): 9 boys and 11 girls, ages 5 to 13.
Methods: Performance on three simple pitch matching tasks was measured (1) before training, (2) after 4 weeks of training by Method A (instantaneous visible feedback with a pitch indicator), (3) after another 4 weeks of training by Method B (traditional noninstrumental techniques), and (4) after 6 weeks without further training. Ten children received Method A first; the other 10 received Method B first. Evaluation tasks used the pitch indicator and performance was measured on a 5-point scale.
Findings: Instrumental techniques showed no advantage over noninstrumental techniques to teach simple pitch control.
Duration: February 1970-February 1971.
Publications: S.A.R.P. Report #5 is available from Clarke School for the Deaf.

Mentally Retarded

29-HB-1 FAIRVIEW SOCIAL SKILLS SCALE

Investigator(s): Robert T. Ross, Ph.D., Chief of Research, Fairview State Hospital, 2501 Harbor Boulevard, Costa Mesa, California 92626.
Purpose: To develop a scale which will measure social skills of moderately and mildly retarded individuals.
Subjects: All patients at the Fairview State Hospital with IQ's greater than 35.
Methods: The scale will be developed by trial-and-error and factor analysis, will be revised, and released for criticism. It will then be given to definite age groups of retarded and normal populations.
Duration: September 1971-September 1972.

29-HC-1 TODDLER RESEARCH AND INTERVENTION PROJECT

Investigator(s): William Bricker, Ph.D., Professor, Department of Psychology; and Diane Bricker, Ph.D., Research Associate, George Peabody College for Teachers, Box 163, 21st Avenue South, Nashville, Tennesse 37203.
Purpose: To develop educational content and methodology to facilitate the acquisition of language and sensory motor behavior in young developmentally delayed children.
Subjects: 20 toddlers, ages 14 to 36 months, male and female: 10 infants are developmentally delayed (e.g., Down's Syndrome); and 10 are developmentally normal infants.
Methods: Yearly progress of the delayed children will be gauged using standardized instruments (e.g., Bayley Scales) and scales developed to assess the acquisition of specific abilities (e.g., imitation). Specific studies have employed and will employ both single subject and group design to assess the effects of various content, procedure, and sequences on the rate and efficiency of acquisition of the dependent variable.
Findings: The pre- and posttest comparison using the Bayley Scales indicates small gains for the majority of the delayed children during the first 9 months of the project.
Duration: October 1970-June 1975.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare; Kennedy Foundation.
Publications: Report on the first year research is available from the investigator.

29-HC-2 FAIRVIEW PROBLEM BEHAVIOR RECORD

Investigator(s): Robert T. Ross, Ph.D., Chief of Research, Fairview State Hospital, 2501 Harbor Boulevard, Costa Mesa, California 92626.
Purpose: To record with some objectivity the frequency, nature, and occurrence of various problem behaviors of mentally retarded individuals.

Subjects: 358 male and 259 female mentally retarded patients at the Fairview State Hospital; average chronological age, 24.

Methods: Factor analyses of the ratings received for the patients on 26 problem behaviors indicated that five factors described their behavior: overt destructive behavior, hyperactive behavior, sexual behavior, covert behavior, and overt unacceptable behavior. In February 1972, the Problem Behavior Record will be administered in conjunction with intelligence, self-help, and language development scales; and the reliability of these studies will be reported.

Duration: 1970-1972.

29-HE-1 EFFECT OF VISUAL AND AUDITORY BACKGROUND ON READING ACHIEVEMENT TEST PERFORMANCE OF BRAIN INJURED CHILDREN

Investigator(s): John L. Carter, Ph.D., Director; and Angelo Diaz, Ed.D., Assistant Professor, College of Education, Department of Clinical Education, University of Houston, Houston, Texas 77004.

Purpose: To determine and compare the effects of increasing amounts of visual and auditory background distractions on reading achievement test performance of children with and without brain injury.

Subjects: 42 brain injured boys and 42 boys without brain injury, ages 11 to 12, in grade 6, who have Wechsler Intelligence Scale for Children (WISC) scores between 85 and 115.

Methods: The Lindquist Complex Latin square design was employed. The Stanford Achievement Test for reading comprehension was given to the subjects under different combinations of three visual distractions and three auditory distraction conditions, and reading scores were analyzed.

Findings: The increased visual distraction did not decrease the reading comprehension of either group. No difference was observed between the groups under visual or auditory distraction. There was no trend for reading comprehension to decrease with combinations of increasing visual and auditory distraction.

Duration: September 1968-August 1969.

Cooperating group(s): Houston Independent School District; Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: *Exceptional Children*, October 1971.

29-HE-2 INFORMATION PROCESSING IN RETARDED AND NORMAL CHILDREN AS A FUNCTION OF TASK COMPLEXITY AND MOTIVATION

Investigator(s): Gerald E. Gruen, Ph.D., Associate Professor, Department of Psychology, Purdue University, Lafayette, Indiana 47907.

Purpose: To compare normal and retarded children of the same mental age on learning and problem solving tasks of unequal difficulty.

Subjects: 91 retarded and 121 normal children in three studies: Study 1 subjects had mental ages of 5, 7, and 9; Study 2 subjects had a mean mental age of 6.8; and Study 3 subjects had a mean mental age of 9.75.

Methods: In all three studies the retarded and normal children were matched individually for mental age and were presented with a task. In Study 1 the children performed conservation tasks; in Study 2 they were presented with traditional learning tasks; and in Study 3 they were given an information processing problem. In all studies the tasks presented varied in terms of difficulty or complexity. It was expected that as task difficulty increased, the normal-retarded differences in performance would also increase.

Findings: Study 1 revealed no differences in performance on conservation tasks between the retarded and normal children. In Study 2 no differences on low difficulty learning discrimination tasks were found, but a trend on the more difficult tasks for normal children to outperform retarded children was evident. In Study 3 mixed results were obtained; retarded and normal subjects differed in strategy scores on the most complex tasks, but not on other dependent variables or less complex tasks. Overall, little evidence was found to support the hypothesis that retarded-normal differences would increase with increasing difficulty.

Duration: June 1969-June 1971.

Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

29-HE-3 AN INTENSIVE TRAINING CURRICULUM FOR THE EDUCATION OF YOUNG EDUCABLE MENTALLY RETARDED CHILDREN

Investigator(s): Sheila A. Ross, Ph.D., Senior Research Associate, Palo Alto Medical Research Foundation, Palo Alto, California 94305; and Dorothea M. Ross, Ph.D., Associate Research Psychologist, Medical Center, University of California at San Francisco, San Francisco, California 94122.

Purpose: To demonstrate the effectiveness of a social learning approach on the education of young educable mentally retarded (EMR) children.

Subjects: 60 EMR children, ages 5 to 10 (mean age, 7.87), who had Stanford-Binet IQ scores ranging from 45 to 80 (mean IQ, 62). No subjects had gross motor, sensory, or emotional defects.

Methods: The children were assigned randomly by class to experimental or control groups with 30 children in each group. Following the administration of IQ and achievement tests, the experimental group participated in a new intensive 1-year curriculum for primary EMR classes. The control group followed a traditional EMR curriculum. At the end of the school year, both groups were again tested on achievement and IQ. The tests used were the Stanford-Binet Intelligence Test, the Metropolitan Readiness Tests, and the Metropolitan Achievement Tests Primary I Battery.

Findings: On postexperimental tests, the experimental group showed a mean IQ gain of 12 points, while the control group showed a mean IQ gain of 0.40 points. In achievement scores, the experimental group showed a mean increase of 20.33 points, while the control group showed a mean increase of 6.50.

Duration: January 1969-December 1971.

Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

29-HF-1 CONGENITAL MALFORMATIONS AND MENTAL RETARDATION

Investigator(s): Josef Warkany, M.D., Professor, Research Pediatrics, Mental Retardation Research, Children's Hospital, Elland and Bethesda Avenues, Cincinnati, Ohio 45229.
Purpose: To conduct research related to human development that may help determine causes and means of prevention of mental retardation and congenital malformation in children.
Subjects: Children of both sexes, ages birth to adolescence.
Methods: Clinical, roentgenologic, and cytogenetic methods will be employed.
Duration: June 1971-May 1972.
Cooperating group(s): Children's Hospital, Cincinnati; University of Cincinnati Affiliated Clinical Program and Facility for the Mentally Retarded; National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-HH-1 REINFORCEMENT PROCEDURES AND SOCIAL BEHAVIOR IN A GROUP CONTEXT WITH SEVERELY RETARDED CHILDREN

Investigator(s): Michael J. Guralnick, Ph.D., Director of Research; and Mark A. Kravik, B.A., Research Assistant, National Children's Center, Inc., 6200 Second Street, N.W., Washington, D.C. 20011.
Purpose: To develop rudimentary social behaviors in retarded children (e.g., physical contact and orienting towards another individual) using operant procedures in a group setting; and to note edible versus social reinforcement differences.
Subjects: Eight severely retarded children: six male, two female; ages 6 to 10, with various diagnoses including unintelligible speech and limited social behavior.
Methods: Two groups of four subjects each were matched on an initial scale of social behavior. Group I was given edible reinforcement, initially noncontingent and then contingent on social behavior. Once the social behavior increased the children were returned to noncontingent reinforcement to reestablish a baseline, and then they were reinforced contingently again. Group II received only social reinforcement followed by edible reinforcement. Daily observations, using a scale, were made by two observers in both group and free play situations.
Findings: Social behavior was developed in Group I and was under control of contingent edible reinforcement. Social reinforcement in Group II did not produce noticeable effects, but when given edible reinforcement contingently, the subjects' social behavior markedly increased. No generalization of this behavior to a free play situation was noted.
Duration: February 1970-August 1971.

29-HH-2 APPLICATION OF BEHAVIORAL PRINCIPLES TO THE REMEDIAL INSTRUCTION OF RETARDED AND EMOTIONALLY DISTURBED YOUNG CHILDREN

Investigator(s): Sidney W. Bijou, Ph.D., Professor; and Jeffrey A. Grimm, Ph.D., Visiting Research Associate, Child Behavior Laboratory, University of Illinois, 403 East Healey, Champaign, Illinois 61820.
Purpose: To work out a structure of the class day, to prepare programmed instructional material (cognitive subjects), to delineate individual pupil assessment procedures for the

teacher, to explicate the use of behavior modification techniques for social-emotional behavior in the classroom, to articulate general procedures for training the teacher's assistant and the children's parents, and to analyze associated theoretical and methodological problems.

Subjects: 14 to 20 handicapped children, ages 5 to 8, with retarded to normal intelligence (IQ's of 59 to 108), who exhibit severe behavior problems or extreme learning disabilities that public school personnel cannot handle.

Methods: The individual-organism design is employed in which each child adapts, extends, and refines the individual-organism design to studies with young children in natural settings. Information on the preparation of the materials and teaching procedures is derived from three sources: (1) data from systematic modification of specific teaching practices and conditions, and changes in the behavior of individual children, (2) data from monitoring the progress of each child in the academic tool subjects, and (3) data from formal descriptive and experimental field studies on individual children.

Duration: September 1968-August 1973.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: Bijou, S. W. Studies in the experimental development of left-right concepts in retarded children using fading techniques. In N. R. Ellis (Ed.), *International review of research in mental retardation.* Vol. III. New York: Academic Press, 1968; Peterson, R. F.; Cox, M. A.; and Bijou, S. W. Training children to work productively in classroom groups. *Exceptional Children,* 1971, 37, 491-500.

29-HI-1 EFFECT OF AREA SIZE ON PLAY ACTIVITIES

Investigator(s): Kathy Alevizos, M.S., Supervisor, Adaptive Therapy Room; and V. H. Labrecque, M.S., Research Supervisor, Children's Behavior Therapy Unit, 27 C Street, Salt Lake City, Utah 84103.

Purpose: To determine the effect of different size areas on the cooperative play, parallel play, independent play, self-directed activities, and no activity of retarded children.

Subjects: Three boys and three girls, ages 4 to 9, with various diagnoses extending from severe behavioral problems to Down's Syndrome. Two of the children had already developed play skills; the other four had not.

Methods: Three different room sizes were studied. Data were collected by two or more scorers on cooperative play, parallel play, independent play, self-directed activities, and no play. If the scoring reliability fell below 80 percent, the data were discarded for that session. Ten-second intervals were used; the scorer changed to a new subject every 10 seconds. Each child was sampled for 10 seconds every 70 seconds for a 31-minute period. A chi-square analysis will be performed on the frequency of the different kinds of activity under the different conditions.

Findings: Large differences were found in the type of play activity of the children who did not have play skills. More cooperative, parallel, and independent play was exhibited by children who do not normally exhibit these behaviors. There is a slight difference in the same direction for children with play skills.

Duration: November 1971-December 1971.

Gifted

29-IA-1 **VOCATIONAL EDUCATION FOR THE ACADEMICALLY TALENTED: DEVELOPMENT OF AN INSTRUCTIONAL SYSTEM**

Investigator(s): Robert E. Boyd, Ph.D., Assistant Professor; and Kathryn W. Smith, Ed.D., Department of Educational Psychology, University of Illinois, Urbana, Illinois 61801.

Purpose: To provide experience in modern business practices; to develop an understanding of how social organizations function by using the business or industrial setting as a social psychological laboratory; to bridge the gap that exists between generations by exposing each generation to the other through common work experience; and to help gifted adolescents find relevance in their educational experiences.

Subjects: Academically talented high school students.

Methods: A curriculum will be developed that will coordinate classroom experience in psychology, sociology, and economics with applied work experience.

Duration: March 1970-July 1971.

Emotionally Disturbed and Mentally Ill

29-JA-1 **EARLY IDENTIFICATION OF EMOTIONALLY HANDICAPPED CHILDREN: A CROSS-VALIDATION STUDY OF PERCEIVED DISTURBANCE**

Investigator(s): Edward W. Schultz, Ph.D., Assistant Professor; and Anne Manton, Graduate Research Assistant, Department of Special Education, University of Illinois, Urbana, Illinois 61801.

Purpose: To determine the efficacy of using the Bower-Lambert Early Identification of Emotionally Handicapped Children Scale as a screening process, especially when the interpersonal need preferences of teachers and students are considered.

Subjects: 1,800 students in grades 3 and 4; and 90 teachers of grades 3 and 4 from Ford and Iroquois counties.

Methods: The Bower-Lambert Early Identification of Emotionally Handicapped Children, the Fundamental Interpersonal Relations Orientation-Behavior, and the Fundamental Interpersonal Relations Orientation-Behavior (Children's) scales were administered.

Duration: October 1970-August 1971.

Cooperating group(s): Graduate Research Board, University of Illinois; Ford-Iroquois County Special Education Association; Adler Zone Center, Champaign, Illinois; Ford-Iroquois County public and parochial school systems.

29-JB-1 VISUAL RESPONSE TO OUT-OF-FOCUS SLIDES BY EMOTIONALLY DISTURBED CHILDREN

Investigator(s): Vivian Rakoff, M.A., D.M., Director, Post Graduate Education, Department of Psychiatry, University of Toronto, Toronto 10, Ontario, Canada; and Ann Rose, B.A., Research Assistant, Clark Institute of Psychiatry, 250 College Street, Toronto 10, Ontario, Canada.

Purpose: To investigate the relationship of the emotionally disturbed child's perceptual attention to family members and his affective feelings for those members.

Subjects: 15 emotionally disturbed children, ages 6 to 10: 4 females and 11 males and their siblings; and 15 normal children, matched for age and sex, and their siblings.

Methods: The responses of the emotionally disturbed children were controlled for by their siblings, the normal children, and the normal siblings. The time to recognize an out-of-focus facial slide of family member or neutral person was recorded. A three-way analysis of variance (of person viewing, slide viewed, and group) was performed on the time it took to recognize the slide and on questionnaire results of affective feelings.

Findings: Two groups of emotionally disturbed children were distinguished by their responses to the slides, especially their response to slides depicting their mothers. The mother's viewing time for her own slide was particularly slow.

Duration: January 1970-December 1971.

29-JC-1 OBSESSIVE CHILDREN

Investigator(s): Paul L. Adams, M.D., Professor, Psychiatry and Pediatrics; and Director, Children's Mental Health Unit, J. Hillis Miller Health Center, University of Florida, Gainesville, Florida 32601.

Purpose: To make a sociopsychiatric study of obsessive children and adolescents.

Subjects: 30 obsessive boys and girls, ages 6 to 18, who measure high in intelligence and come from highly educated middle class families.

Methods: The case study method was employed. Empirical generalizations were made from a non-Freudian frame of reference. The symptoms, family demography, family values and attitudes, differential diagnosis, incidence, and treatment were investigated.

Duration: 1957-1972.

29-JD-1 DIVERSE CONDITIONING WITH PSYCHOGENIC VOMITING AND SELF-INDUCED SEIZURES

Investigator(s): Logan Wright, Ph.D., Associate Professor, Medical Center, University of Oklahoma, 800 N. E. Thirteenth Street, Oklahoma City, Oklahoma 73104.

Purpose: To study the effects of diverse conditioning on psychogenic vomiting and the self-induced seizures of young children.

Subjects: Children, ages 3 to 5, who manifest either psychogenic vomiting or self-induced seizures.

Methods: A base rate for the number of seizures or vomiting experiences manifested by the children was established. These responses were conditioned by aversive control (electric shock) during five 1-hour treatment periods per day for a 4-day period.

Findings: Self-induced seizures and psychogenic vomiting can be brought under stimulus control within 4 days. The *holding power* of this control continues for many months after aversive conditioning has ceased.
Duration: June 1970-December 1971.
Publications: A report of the research is available from the investigator.

29-JE-1 A DIAGNOSTIC RATING SCALE OF CHILDHOOD PSYCHOSIS

Investigator(s): Eric Schopler, Ph.D., Associate Professor; and Robert J. Reichler, M.D., Assistant Professor, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina 27514.
Purpose: To develop an instrument on which the degree of psychosis in children could be reliably rated by relatively untrained personnel.
Subjects: 34 autistic children, ages 15 months to 8 years, who were diagnostically evaluated in the Child Research Project, University of North Carolina.
Methods: Each child was rated on a 15-item scale derived from Creak's 9-Point Diagnostic Criteria of Autism by two research assistants who knew nothing about the child. Two clinicians made independent ratings on a 4-point scale: (l) no psychosis, (2) mild psychosis, (3) moderate psychosis, and (4) severe psychosis. A stepwise multiple regression was run between the clinicians' pooled ratings and the research assistants' ratings.
Findings: Five subscales (auditory responsiveness, near receptor responsiveness, verbal communication, nonverbal communication, and activity level) of the original 15 items accounted for 73 percent of the variance. The ability of these five items to predict a clinical judgment is currently being cross-validated on another sample of children.
Duration: June 1968-June 1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-JE-2 FOLLOW-UP OF AUTISTIC CHILDREN AFTER GROUP PSYCHOTHERAPY

Investigator(s): Eric Schopler, Ph.D., Associate Professor; and Robert J. Reichler, M.D., Assistant Professor, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina 27514.
Purpose: To examine the present status and progress of 20 autistic children who have had 1 to 5 years of group therapy.
Subjects: 20 autistic adolescent children in group psychotherapy at North Carolina Memorial Hospital.
Methods: Parent interviews, psychological testing, clinical interviews with the child, clinical ratings by research assistants, and school reports will be employed.
Duration: September 1970-June 1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-JE-3 HIGH DOSAGE LEVELS OF CERTAIN VITAMINS IN THE TREATMENT OF CHILDREN WITH SEVERE MENTAL DISORDERS

Investigator(s): Bernard Rimland, Ph.D., Director, Institute for Child Behavior Research, 4758 Edgeware Road, San Diego, California 92116.
Purpose: To investigate the effects of high dosage levels of certain vitamins in the treatment of children with severe mental disorders.
Subjects: 189 autistic and autistic-type children, ages 2 to 20.
Methods: All subjects were given high dosage levels of certain vitamins under the care of their local physicians. The degree of improvement on vitamins (if any) was correlated with responses to a very detailed behavior and medical background questionnaire previously completed by the subjects' parents. Cluster analysis methodology was used to determine between group differences in response to vitamins.
Findings: Results were found to be significant at the .02 level.
Duration: October 1968-completed.
Publications: Rimland, B. The differentiation of childhood psychoses: An analysis of checklists for 2,218 psychotic children. *Journal of Autism and Childhood Schizophrenia*, 1971, 1(2), 161-174; Rimland, B. The effect of high dosage levels of certain vitamins on the behavior of children with severe mental disorders. In D. R. Hawkins and L. Pauling (Eds.), *Orthomolecular psychiatry*. San Francisco: W. H. Freeman, 1971.

29-JH-1 5-YEAR FOLLOW-UP STUDY OF HYPERACTIVE CHILDREN

Investigator(s): Gabrielle Weiss, M.D., Associate Psychiatrist, Montreal Children's Hospital, 2300 Tupper Street, Montreal, Quebec, Canada.
Purpose: To conduct a 5-year follow-up study of hyperactive children who have taken methylphenidate medication for at least 1 to 3 years.
Subjects: 25 boys, ages 10 to 16, with average intelligence who received methylphenidate; and 25 hyperactive control subjects who did not receive mehylphenidate.
Methods: All experimental subjects were diagnosed as chronically hyperactive 5 years earlier. None were brain damaged or psychotic. The progress of the children with respect to their behavioral and intellectual functioning and academic progress will be compared to 25 hyperactive control subjects who did not receive methylphenidate.
Duration: September 1971-September 1972.
Cooperating group(s): Department of Psychology, McGill University.

Socially Deviant

29-KA-1 FAMILY DEVELOPMENTAL CENTER

Investigator(s): Nathaniel Woods, M.S.W., Executive Director, Family Service Agency, 1010 Gough Street, San Francisco, California 94109.
Purpose: To evaluate a family developmental center that provides services to infants and their teen-age parents who continue to attend high school.

Subjects: 50 pregnant girls, ages 15 to 18; their infants and families. The girls attend schools in the San Francisco Unified School District.
Methods: The investigator will evaluate changes in the girls, the families, and the infants as a result of intensive teaching and day care programs. Emphasis will be placed on changes in self-concept, in parenting skills, and in day-to-day functioning. The entire spectrum of the developmental skills of the infants will be studied.
Duration: July 1971-June 1976.
Cooperating group(s): San Francisco Unified School District; Office of Child Development, U. S. Department of Health, Education, and Welfare.

Juvenile Delinquency

29-KC-1 ARCHIVAL FACTORS FOR PREDICTING RECIDIVISM OF FEMALE JUVENILE DELINQUENTS

Investigator(s): Victor J. Sepsi, Ph.D., Department of Education, Kent State University, Kent, Ohio 44240. Address correspondence to: 2707 Monroe Avenue, Cleveland, Ohio 44113.
Purpose: To investigate statistically the relationships among personal variables that distinguish between female juvenile recidivists and nonrecidivists.
Subjects: 210 female juvenile delinquents, ages 12 to 18, committed to a girls' training school in Ohio.
Methods: Approximately 715 female juvenile delinquents were paroled between January 1969 and December 1969. An investigation of first-released girls revealed that 105 girls relapsed between January 1970 and December 1970. These girls were compared with a representative sample of 105 nonrecidivist first-released girls. Information was obtained solely from institutional records. The 104 variables used were selected for their availability and objectivity. A checklist descriptive of female juvenile delinquent recidivists and a three-item multiple regression formula were included in the research design.
Findings: Eighteen variables were found to distinguish between recidivists and nonrecidivists. These combine to suggest that early age at onset of delinquency, fewer years of formal education, and family relationships are significantly associated with recidivism.
Duration: January 1971-June 1971.
Cooperating group(s): Scioto Village; Ohio Youth Commission.

29-KD-1 GUIDANCE COUNSELING AND DIAGNOSTIC SERVICES FOR JUVENILE DELINQUENTS

Investigator(s): P. Richard Apffel, M.D., Child Psychiatrist; John J. Shannon, Ph.D., Psychologist; Rudolph Siegler, M.S. W., Psychiatric Caseworker; and Paul Tessier, Social Worker, Essex County Youth House, 70 Duryee Street, Newark, New Jersey 07103.
Purpose: To provide the juvenile court with as much diagnostic information as possible in order to clarify the individual needs of children.

Subjects: 1,000 children: 800 males, 200 females, ages 8 to 18. The subjects live in Newark (85 percent), are black (85 percent), Puerto Rican (5 percent), and white (10 percent).
Methods: Each child is seen frequently, and a history on the child is compiled. Each of the subjects attends a special school. Each child is observed under group as well as individual conditions, and evaluations by a psychologist, psychiatrist, and group therapist are conducted. Social workers then combine, interpret, and clarify all reports and make definite recommendations based on the total findings during the child's detention.
Findings: 50 percent more of the detained children are counseled therapeutically than were counseled before the inception of the program.
Duration: September 1971-August 1972.
Cooperating group(s): New Jersey State Law Enforcement Planning Agency.

29-KD-2 MEASURES OF FUTURE TIME PERSPECTIVE, PLANNING, FORESIGHT, AND IMPULSIVITY AS PREDICTORS OF RECIDIVISM IN DELINQUENT MALES

Investigator(s): Alan H. Roberts, Ph.D., Professor, Department of Clinical Psychology, University of Minnesota, Box 297, Minneapolis, Minnesota 55455; and Robert V. Erickson, M.A., Assistant Director, Youth Development Center, Loysville, Pennsylvania 17047.
Purpose: To locate measures that may lead to accurate predictions of a delinquent's probability of adjusting appropriately in society; to contribute to the theory and understanding of the important variables controlling delinquent behavior; and to determine differential effects of treatment programs on the varied backgrounds and personalities of delinquents.
Subjects: 68 delinquent boys, ages 13-2 to 19-4 (mean age 16-1), who were discharged within a 5-month period during the summer of 1970 from an institution for the rehabilitation of delinquent boys.
Methods: Within a week prior to discharge, a testing program was initiated that included (1) Wallace's Future Time Perspective Test, which measures a subject's ability to see his life as having an *extension into the future* and *coherence;* (2) Porteus Mazes, which measure foresight, planning ability, and impulsivity; (3) Future Events Test, which measures time perspective; and (4) a 7-point rating scale (completed by the institution psychologist, the school principal, and the student's living unit supervisor), which rates the student's motivation, forethought, impulse control, maturity, and expectations of a successful adjustment upon release. One year and 3 months after the student's release, his release status was obtained from the courts and probation officer. Release status was defined on an 8-point continuum from no contact with probation officer to actual recommitment to an institution.
Duration: Summer 1970-winter 1972.

29-KF-1 PREDICTIVE SENTENCING OF 16- TO 18-YEAR-OLD MALE HABITUAL TRAFFIC OFFENDERS

Investigator(s): Leo H. Whinery, LL.B., LL.M., Professor, College of Law, University of Oklahoma, Norman, Oklahoma 73069; and Presiding Judge, Municipal Criminal Court, 122 North Peters, Norman, Oklahoma 73069.
Purpose: To reduce recidivism among 16- to 18-year-old male habitual traffic offenders by selective treatment based on a knowledge of what forms of treatment are most effective with particular types of offenders.

Subjects: 171 male habitual traffic offenders, ages 16 to 18, convicted of three traffic offenses within a year.
Methods: The project is divided into two phases: (1) Descriptive phase: Descriptions will be made of the population studied, the treatment modalities, and the rate of recidivism among the treatment groups. Hypotheses of optimal treatment will be formulated and predictive models based on the characteristics of offenders will be constructed. (2) Predictive phase: Offenders will be given a presentence investigation and sentenced discriminately into one of five treatment groups (a fine, individual counseling on deviant motivation to violate the law, group counseling on deviant motivation to violate the law, drivers education, and consequences of illegal driving practices) depending on the output of the predictive model. The success of the predictive scheme will be tested by comparison of recividism rates.
Duration: January 1969-April 1974.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; University of Oklahoma Research Institute; University of Oklahoma Graduate College; City of Norman, Oklahoma.

29-KH-1 DRUG ACTIVATED ELECTROENCEPHALOGRAPHY IN CHILDREN

Investigator(s): George N. Thompson, M.D., Society of Biological Psychiatry, 2010 Wilshire Boulevard, #607, Los Angeles, California 90057.
Purpose: To show the effects of commonly used drugs that produce abnormalities in the electroencephalograms of children.
Subjects: Children, ages 8 to 16.
Methods: Clinical research studies will be conducted on juvenile delinquents who have histories of habituation or overuse of drugs.
Duration: January 1970-June 1972.

29-KJ-1 THE RELATIONSHIP OF SELECTED VARIABLES TO JUVENILE DELINQUENCY AMONG YOUTHS FROM BROKEN HOMES

Investigator(s): Harvey R. Cox, M.S., Statistical Analyst, Research and Statistics Section, North Carolina State Department of Social Services, P. O. Box 2599, Raleigh, North Carolina 27602.
Purpose: To explore the phenomenon of juvenile delinquency in relation to different types of broken homes.
Subjects: 754 juvenile delinquents from broken homes who were petitioned to court in 1969 in 14 North Carolina counties.
Methods: The type of juvenile delinquency committed was treated as the dependent variable with the type of broken home, income of family, race, sex, location of residence, and age treated as control variables. The chi-square statistic was used to test six null hypotheses concerning the type of juvenile delinquency committed and the independent variables.
Findings: Results indicated that there is not a significant relationship between the type of broken home and juvenile delinquency committed nor between family income and the delinquency committed. There are significant variations in the type of delinquency committed when race, sex, location of residence, and age are considered.
Duration: January 1970-April 1971.

29-KK-1 CHILD ADVOCACY: AN EXPERIMENT IN THE PREVENTION OF DELINQUENCY

Investigator(s): Wilbert W. Lewis, Ed.D., Director, Child and Youth Development Institute, 3420 Richards Street, Nashville, Tennessee 37215.

Purpose: To develop a model child advocacy program to serve children in a single economically deprived neighborhood in Nashville, Tennessee.

Subjects: All children and youth who reside in the target neighborhood.

Methods: The project will develop a neighborhood policy-making board and resident child advocate staff which, in collaboration with a professional staff, will attempt to (1) identify children in need of service and match them with services available in the neighborhood, (2) introduce new resources to provide services identified as needed but missing, and (3) influence existing programs for children to be more responsive to the needs of the children they serve.

Duration: July 1971-June 1974.

Cooperating group(s): Youth Development and Delinquency Prevention Administration, Social and Rehabilitation Service, U. S. Department of Health, Education, and Welfare; Legal Services of Nashville, Inc.; Nashville-Davidson County Schools; Metropolitan Welfare Commission; Metropolitan Juvenile Court; Metropolitan Public Health.

THE CHILD IN THE FAMILY

Family Relations

29-LA-1 CORRELATION OF PARENTAL PERCEPTION OF THEIR ADOLESCENT BETWEEN AUTHORITARIAN AND DEMOCRATIC PARENTS

Investigator(s): Mary Ann Notari, Student, Department of Sociology, California State College, Dominguez Hills, Gardena, California 90247. Address correspondence to: 21806 Paul Avenue, Torrance, California 90503.

Purpose: To isolate factors that distort or enhance parent perceptions of their adolescent.

Subjects: 11 parent-child dyads (10 mothers, 1 father). Approximately half of the children are male, all are high school seniors living at home. Family incomes range from $9,000 to $20,000. There are no more than four children in a family.

Methods: Each subject was personally interviewed and answered a two-part questionnaire. Part I determined authoritarian rating and the degree of adolescent identification to his parent. The parent-child dyads were grouped according to these measures. In Part II the parents were asked to predict their child's responses to the 20 questions the child had answered. A cross-group comparison was made to see which areas were well perceived and which were least perceived by each group.

Findings: Parental stress on adult standards, repression of anger by adolescents towards their parents, and parental disregard for adolescents' needs are factors that inhibit parental perception of the internal feelings of their adolescent. Parental acceptance of the importance of peer relationships and moderate child identification with his parent are factors that promote perception.

Duration: January 1971-June 1971.

Cooperating group(s): Torrance Unified School District.

29-LA-2 PATTERNS AND CONTINGENCIES OF MOTHER-INFANT GAZING

Investigator(s): Kenneth S. Robson, M.D., Assistant Professor, Department of Psychiatry, School of Medicine, Tufts University, 171 Harrison Avenue, Boston, Massachusetts 02116.

Purpose: To assess the patterns and contingencies of early social interaction (gaze, smile, and vocalization) between mother and infant.

Subjects: 36 mother-infant dyads: infants' ages, 10 days to 3 months. Half of the children were firstborn, and half were later born.

Methods: Home observations were conducted with interaction data collected by tape recorder. Analysis will focus on sequences in relation to age, sex, birth order, and individual differences.

Duration: June 1969-September 1972.

Cooperating group(s): St. Margaret's Hospital; Laboure Center.

29-LC-1 FATHERLESS FAMILIES

Investigator(s): Paul L. Adams, M.D., Professor; Joan K. Crist, M.S.W., Instructor; and Daniel McK. Tucker, B.A., Assistant, Department of Psychiatry, J. Hillis Miller Health Center, University of Florida, Gainesville, Florida 32601.
Purpose: To study the relationship between fatherlessness and psychopathology.
Subjects: 105 fatherless children who were outpatients in a child psychiatry clinic; and 53 child patients with fathers. The subjects, mean age 10.4, were 70 percent male and 92 percent white.
Methods: Comparisons of family patterns and styles were made in the fathered and fatherless groups. The fatherless sample was divided into three groups: (1) hard core: more than 2 years without a father; (2) transitional: less than 2 years without a father; and (3) historical: intact families with a history of fatherlessness. The historical fatherless cases required a separate analysis. Largely descriptive and correlative statistics were obtained, and an analysis of variance was made.
Findings: Several general categories of psychopathology were found to correlate with fatherlessness. Fatherlessness *per se*, however, appears to be a less telling indicator of psychopathology than does the economic status of the family.
Duration: December 196[illegible]-December 1971.

29-LC-2 FAMILY STRUCTURE AND REJECTION OF TEACHER AUTHORITY

Investigator(s): M. Bullock Lamberts, M.A.; Edsel L. Erickson, Ph.D., Professor; and Herbert L. Smith, Ph.D., Professor, Department of Sociology, Western Michigan University, Kalamazoo, Michigan 49001; and Clifford E. Bryan, Ph.D., Professor, Department of Sociology, University of Idaho, Moscow, Idaho 83843.
Purpose: To relate social, psychological, and sociological theory to the one-parent family in order to assess the impact of one-parent family structures upon a deduced dissonance of attitude towards authority figures (teachers) on the part of the children affected.
Subjects: 100 students in grades 7 and 8 in the public schools of a large midwestern industrial city. Children from one- and two-parent families were matched on the basis of sex, age, socioeconomic status, and race.
Methods: The subjects responded on Likkert type scales embedded within a questionnaire that contained diverse items related to their schools. These were administered to subjects within a larger group of subjects by paired researchers; anonymity was carefully stressed. Scales measured both overt and covert attitudes of acceptance or rejection of authority.
Findings: Patterns indicate significantly more dissonance in one-parented children according to a chi-square at the .05 level. These one-parented children are more likely to appear overtly accepting while they covertly reject teacher authority. The smaller number of two-parented children who show dissonance exhibit a pattern of overt rejection and covert acceptance that is directly opposed.
Duration: Spring 1970-April 1971.
Cooperating group(s): Grand Rapids Public School System.
Publications: A copy of a paper presented at the Ohio Valley Sociological Meeting, Cleveland, Ohio, April 1971 is available from M. B. Lamberts.

29-LC-3 THE EFFECT ON DIFFERENTIALLY ENDOWED SIBLINGS OF SOCIAL COMPARISON WITHIN THE FAMILY

Investigator(s): Jane Pfouts, M.S.W., Lecturer, School of Social Work, University of North Carolina, Alumni Building, Chapel Hill, North Carolina 27514.

Purpose: To explore the direct effect of siblings upon one another, and to investigate the hypothesis that a child's self-image is shaped to a considerable extent by the abilities and attributes of his siblings relative to his own.

Subjects: 45 male sibling pairs, ages 5 to 14, from white, intact, middle class families with two children no more than 3 years apart in age. The sample includes 15 cases in which one boy is superior to his brother in IQ by at least 15 points; 15 cases in which one boy achieves adequately or better in school, and his brother has a learning disability; and 15 cases in which the brothers are both superior in IQ and within 15 points of each other.

Methods: Each subject will be administered the Family Relations Test, the Slosson IQ Test, and the California Test of Personality. Both parents will be asked to complete a questionnaire, and, with their permission, a teacher's rating will be collected for each boy.

Duration: June 1970-June 1972.

29-LF-1 PARENTS' POLICE RECORDS FOR DRUNKENNESS AND BEHAVIOR PROBLEMS OF THEIR CHILDREN

Investigator(s): Louise W. Cureton, Ph.D., Senior Research Scientist, Institute for Research in Education, American Institutes for Research, Palo Alto, California 94302.

Purpose: To identify possible effects of parental drunkenness on the behavior of children.

Subjects: 16,000 boys and girls in grades 8 through 12, enrolled in public, private, and parochial schools in one community.

Methods: Physically and mentally handicapped children were excluded from the study. The subjects were followed after graduation. Police and welfare agency records were searched for records of drunkenness of children and parents. These children were compared with others in the sample for difference in school discipline and behavior problems, school dropouts, juvenile delinquency, emotional disturbances, and arrests for drunkenness. Cluster scores of interest, personality, ability, and background variables from the project TALENT testing program were used to further define subgroups and control confounding variables, such as socioeconomic status. Sibling differences were also investigated.

Findings: Tentative findings indicate that children whose parents have drunkenness records have twice as many arrest records for drunkenness and more dropout and juvenile delinquency records.

Duration: June 1970-March 1972.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-LG-1 THE SCHOOL ADJUSTMENT OF POST-MENINGITIC CHILDREN

Investigator(s): John E. Pate, Ed.D., Associate Professor and Director, Child Psychiatry School, Medical School, Vanderbilt University, Nashville, Tennessee 37203.

Purpose: To assess school related difficulties and sequelae of post-H. flu meningitic children.

Subjects: 60 boys and girls who survived laboratory confirmed H. flu meningitis, ages 6 to 10; and two control groups of children who had no evidence of early illnesses indicative of central nervous system involvement. One group was matched on the basis of age, sex, socioeconomic level, and classroom membership; the second group was matched on the basis of equivalent hospitalization.

Methods: The subjects will be given educational, psychological, perceptual motor, neurological, and diagnostic tests relative to minimal brain damage. Classroom teachers will be interviewed and preschool home and childrearing influences will be examined. The data will be analyzed by factor analysis and chi-square comparisons.

Duration: February 1971-November 1971.

Cooperating group(s): Emory University Medical School; University of Texas, Southwestern Medical School; Tulane School of Medicine; University of Tennessee Medical School.

29-LC-2 FAMILY ADAPTATION TO FATAL ILLNESS OF CHILDREN

Investigator(s): E. H. Futterman, M.D., Associate Professor of Psychiatry; and Irwin Hoffman, Psychologist, Institute for Juvenile Research, College of Medicine, University of Illinois, Chicago, Illinois 60612.

Purpose: To empirically describe the adaptive processes in crisis and possible predictors of success or failure in families with children who are fatally ill.

Subjects: Two groups of families whose children have a fatal illness: a group of 20 to 30 families to be studied intensively, and a group of over 100 families to be studied extensively.

Methods: Descriptive, anecdotal, quantitative, and anthropological approaches will be followed.

Duration: 1965-continuing.

Publications: Futterman, E. H. and Hoffman, I. Crises and adaptation in the families of fatally ill children. In J. Anthony and C. Koupernik (Eds.), *Death in childhood*, International Yearbook of Child Psychiatry (in press).

29-LH-1 FOLLOW-UP STUDY OF BLACK CHILDREN ADOPTED BY WHITE FAMILIES

Investigator(s): Ann W. Shyne, Ph.D., Director of Research; and Lucille J. Grow, M.S.S.S., Research Associate, Child Welfare League of America, Inc., 67 Irving Place, New York, New York 10003.

Purpose: To describe the relationship between black children and their white adoptive parents, and to describe the interaction of the adoption agency and the parents as a basis for making agency services more appropriate to the parents' needs.

Subjects: Part 1: 150 black children, age 6 or older, in selected areas of the country, who have been in white adoptive homes for at least 3 years. Part 2: 60 white families with whom a black child has been recently placed for adoption.

Methods: Part 1 data will be obtained through two interviews with the adoptive parents a year apart and with supplemental data from the child and teacher. The parent interview will be guided by a structured schedule that will investigate selected characteristics of the parents: their childrearing practices; the child's physical, social, and psychological development; and related topics. Part 2 data will be obtained from the adoptive parents, the agency executive, and the social workers who work with the families before and after the placement. Parent interviews will be conducted shortly after the child is placed in the home and again when the adoption is finalized or the child is returned to the agency.

Duration: September 1971-August 1974.

Cooperating group(s): Office of Child Development, U. S. Department of Health, Education, and Welfare; New York adoption agencies.

29-LH-2 MATCHING RESOURCES AND NEED: ADOPTING BLACK CHILDREN

Investigator(s): Daniel Thursz, D.S.W., Dean; and Ruth Young, D.S.W., Professor, School of Social Work and Community Planning, University of Maryland, Baltimore, Maryland 21201.

Purpose: To examine the work of an adoption project in Baltimore that was designed to encourage the adoption of black children by black parents.

Subjects: Approximately 350 persons who contacted the adoption project and expressed an interest in adopting black children.

Methods: Interviews were conducted with each of the families. Agency case files were reviewed to examine the perception and handling of the cases by various child placement agencies.

Duration: June 1971-June 1972.

Cooperating group(s): Department of Social Services, State of Maryland.

Childrearing

29-MB-1 INTERVENTION STUDY WITH MOTHERS AND INFANTS

Investigator(s): Bettye J. Forrester, M.A., Research Associate, Demonstration and Research Center for Early Education, George Peabody College for Teachers, Nashville, Tennessee 37203.

Purpose: To assess the effectiveness of a home intervention program for mothers and infants.

Subjects: 20 young, urban, Caucasian and Negro mothers of low socioeconomic status, who were in sole charge of their infants; their normal children: 10 boys and 10 girls, ages 7 to 9 months; and a control group of an equal number of mother-infant dyads.

Methods: Evaluations were made of instruments for infant testing, home visitor techniques that modify teaching practices of mothers, and materials that foster infant development. Infant development was measured using the Griffith Mental Development Scale, the Infant Psychological Development Scale (Uzgiris-Hunt), and the Bayley Scales of Mental and Motor Development. Maternal behavior during testing was observed, and homes were rated using the Caldwell Inventory of Home Stimulation. One home visitor worked directly in each home over a 9-month period and made a maximum of 24 home visits of at least an hour each. Posttesting and 6-month follow-up testing were conducted. Home visitor terminal evaluations and written evaluations by mothers were used to assess the aspects of the home intervention program.

Findings: Postintervention analysis, comparing the experimental and control groups on the three instruments, indicated that the project favorably affected a wide range of functional areas in the behavioral development of infants. Formative data, including home visitor reports and materials specialist records, were reviewed and evaluated.
Duration: December 1960-November 1971.
Cooperating group(s): National Program on Early Childhood Education, Central Midwestern Regional Educational Laboratory; Office of Education, U. S. Department of Health, Education, and Welfare.
Publications: Forrester, B. J.; Hardge, B. M.; Outlaw, D. D.; Brooks, G. P.; and Boismier, J. D. *Home visiting with mothers and infants.* Nashville, Tennessee: Demonstration and Research Center for Early Education, George Peabody College for Teachers, 1971; Forrester, B. J.; Hardge, B. M.; Outlaw, D. D.; Brooks, G. P.; and Boismier, J. D. *Materials for infant development.* Nashville, Tennessee: Demonstration and Research Center for Early Education, George Peabody College for Teachers, 1971.

29-MC-1

RESULTS OF 100 CASES FROM THE AMERICAN INSTITUTE OF FAMILY RELATIONS CHILDBIRTH EDUCATION CLASSES

Investigator(s): Mary Jane Hungerford, Ph.D., Director, Department of Education, American Institute of Family Relations, 5287 Sunset Boulevard, Los Angeles, California 90027.
Purpose: To determine what effect childbirth education has on the mother and child, and to compare this study with previous surveys of 100 cases.
Subjects: 100 pregnant women in their early childbearing years and their husbands who attend childbirth education classes.
Methods: Data are collected by a questionnaire completed by the women, with medical and other technical information supplied by the attending nurse at delivery. Data analysis will primarily concern means, modes, and medians.
Findings: See *Preparation for Parenthood News.* Los Angeles: American Institute of Family Relations, October 1971 through January 1972, available from the investigator.
Duration: 1970-1972.

SOCIOECONOMIC AND CULTURAL FACTORS

29-NA-1 NOT FORGOTTEN BUT STILL POOR

Investigator(s): Virginia Li Wang, Ph.D., Cooperative Extension Service, University of Maryland, College Park, Maryland 20742; Paul H. Ephross, Ph.D., Associate Professor, School of Social Work and Community Planning, University of Maryland, Baltimore, Maryland 21043; and Lawrence W. Green, Ph.D., School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Maryland 21218.

Purpose: To measure the effects of the Expanded Food and Nutrition Education Program on families who live in rural poverty.

Subjects: 83 female heads of households, ages 19 to over 60, who live in two rural Maryland counties.

Methods: This study is a partial replication of another study, *Poor But Not Forgotten.* Independent interviewers conducted structured interviews with the survivors of a random sample of program participants included in the first evaluative study. Public health data are used in the study.

Findings: The nutrition education evaluation provides clear evidence of program output and indicates the intertwining of help received with the woman's homemaking role and improvement in other aspects of family functioning.

Duration: January 1971-December 1971.

Cooperating group(s): Cooperative Extension Service, University of Maryland; Federal Extension Service, U. S. Department of Agriculture.

29-NB-1 OCCUPATIONAL KNOWLEDGE AMONG HIGH SCHOOL MALES

Investigator(s): Lois B. DeFleur, Ph.D., Associate Professor, Department of Sociology, Washington State University, Pullman, Washington 99163.

Purpose: To assess the scope and validity of occupational knowledge among several categories of high school males who reside in eastern Washington.

Subjects: 371 boys, ages 14 to 19, from 24 rural and urban high schools, representing all socioeconomic strata. White males constituted 97 percent of the sample; 3 percent were from other racial groups.

Methods: Interviews were conducted with all subjects to assess their understanding of seven specific occupational roles that are typical of the region's labor force.

Findings: Preliminary findings indicated that the subjects were rather poorly informed about occupations available to them. They were more knowledgeable about occupations at the lower end of the social scale. Occupational information increases with age, but this appears to be more a product of contact with society than a result of the efforts of educators.

Duration: Spring 1969-summer 1971.

Cooperating group(s): College of Agriculture, Washington State University; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-NB-2 IMPACT OF LOW INCOME ON ASPIRATIONS, EXPECTATIONS, PLANS, AND ACHIEVEMENT OF RURAL INDIAN STUDENTS

Investigator(s): Wayne L. Larson, Ph.D., Associate Professor, Department of Sociology, College of Letters and Science, Montana State University, Bozeman, Montana 59715.
Purpose: To explore the differences in the impact of family income and its correlates on rural Indian students compared to rural non-Indian students.
Subjects: Study I: Indian and non-Indian high school students of both sexes from four schools in rural Montana. (Enrollments in the schools vary from 40 to 500 students; Indian populations vary from 15 to 100 percent.) Study II: Indian high school students from six rural high schools in Montana.
Methods: In a series of projected studies through 1976, two studies have been completed. Study I used questionnaires administered in the classroom to students in four high schools with varying proportions in Indian student enrollment. Variables included total enrollment, dropout rate for Indian students, and different types of schools; e.g., private, public, and/or boarding schools. Study II was conducted in six high schools that vary in the same attributes or variables described in the first study. An interview schedule, developed by the researcher and Indian college students, was employed. The interviews were conducted by Indian students.
Findings: Study I: Income accounts for more variation in some measures of aspiration, expectations, and achievement than ethnicity, but the weight of the evidence suggests that ethnicity is critical in accounting for variation. Study II: Indian parents with high incomes and English teachers appear to be critical influentials.
Duration: 1969-1976.
Cooperating group(s): Agricultural Experiment Station, Bozeman, Montana.
Publications: Larson, W. L. A comparison of the differential impact of ethnicity and perception of family income on educational aspirations, preparation, and parental influence of Indian and non-Indian students in four rural high schools in Montana. Agricultural Experiment Station Bulletin No. 659, Bozeman, Montana: Montana State University Press, 1971.

29-NB-3 THE EFFECTS OF SOCIOECONOMIC MIX ON THE DISADVANTAGED CHILD

Investigator(s): Clyde E. Reese, Ed.D., Chairman, Department of Psychology; and Director, Head Start Research Project, State College of Arkansas, SCA Box E, Conway, Arkansas 72032.
Purpose: To determine the effects of socioeconomic mix on the cognitive, social, and language development of disadvantaged children.
Subjects: 168 preschool children enrolled in 12 Head Start centers in rural west central and western Arkansas.
Methods: Three experimental groups were identified: (1) a group of children representing a 50-50 ratio of socioeconomic mix; (2) a group composed of a majority of disadvantaged children (75-25 ratio); and (3) a control group composed of all disadvantaged children. Three hypotheses relative to the effects of socioeconomic mix on the cognitive, social, and language development were tested using pre- and posttest score gains. The instruments used included the Preschool Inventory, the Peabody Picture Vocabulary Test, the Test of Basic Experiences, the Cincinnati Autonomy Test Battery, the Kansas Social Interaction Observation Procedure, and audiotape recordings of verbal responses.

Findings: Socioeconomic mix has a positive effect on the cognitive development of disadvantaged children, with less positive effects on verbal skills than other areas of cognitive development. As the level of socioeconomic mix increases, there is an increase in interaction between the subject and adults and a decrease in interaction between the subject and peers. As the level of socioeconomic mix decreases, there is a decrease in interaction between subjects and adults and an increase in interaction between subjects and peers. Socioeconomic mix was found to have a positive effect on the social competency of disadvantaged children and a positive effect on the development of social directed behavior.

Duration: 1970-completed.

Cooperating group(s): U. S. Office of Economic Opportunity.

29-NB-4 CULTURE, COGNITION, AND SOCIAL CHANGE: THE EFFECT OF THE HEAD START EXPERIENCE ON COGNITIVE PATTERNS

Investigator(s): Theron Alexander, Ph.D., Professor, Department of Educational Psychology, Temple University, Philadelphia, Pennsylvania 19122.

Purpose: To obtain information about the cognitive patterns of children from culturally deprived areas of the city; to determine the pattern of scores on certain categories of cognitive tasks; and to determine how the pattern is altered by an educational intervention program.

Subjects: 68 black children, ages 3 to 4, of both sexes, from a deteriorated section of Philadelphia.

Methods: The children were tested at the beginning and end of the school year with the Stanford-Binet Intelligence Scale. Several categories were developed for the study from the test items: comprehension, verbal ability, performance, drawing, visual perception, and memory. The data were analyzed to determine if a shift in the pattern had occurred by the end of the year and after the school experience.

Findings: Visual perception and comprehension showed a significant increase in scores using a modified chi-square test.

Duration: 1969-1971.

Cooperating group(s): Head Start, Office of Child Development, U. S. Department of Health, Education, and Welfare; U. S. Office of Economic Opportunity.

29-NB-5 TEACHER PERCEPTIONS OF BASIC MATHEMATICS SKILL NEEDS AND NEED FOR MATHEMATICS REMEDIATION IN SECONDARY VOCATIONAL EDUCATION PROGRAMS

Investigator(s): Thomas E. Long, Ed.D., Assistant Professor, Department of Vocational Education, Pennsylvania State University, 241 Chambers Building, University Park, Pennsylvania 16802.

Purpose: To determine mathematics skill clusters and student deficiencies for vocational specialties.

Subjects: 260 vocational teachers in secondary schools.

Methods: The teachers identified which of 66 basic skills were required for success in the subjects they taught. They identified those that the typical entering student lacked.

Duration: September 1970-June 1971.

29-NB-6 READING DISABILITIES IN MEXICAN-AMERICAN CHILDREN

Investigator(s): Robert I. Acosta, Ph.D., Reading Consultant, California State Department of Education, 721 Capitol Mall, Sacramento, California 95818.

Purpose: To identify factors or combinations of factors that contribute to successful remediation of reading disabilities in Mexican-American children.

Subjects: Two groups of 30 Mexican-American third graders selected from two school districts in California. School A had the highest and School B had the lowest mean and median gains on the Stanford Achievement Reading Test (SAT).

Methods: Cross-tabulations were made of the independent variables (parents' incomes and education, their educational aspirations and occupational desires for their children, and the degree of acculturation of the parent) with the dependent variable (SAT gain scores). The data were analyzed by t-tests and a multiple regression analysis.

Findings: Parents' income level and their educational aspirations and occupational desires for their child were all found to be significant at the .05 level when the samples were combined. The parents' degree of acculturation was significant only for School B. The parents' educational level and the reading test scores were not significantly related for either school. Little difference was found between teaching methods in School A and School B.

Duration: August 1970-May 1971.

29-NB-7 PROGRAMMED REINFORCEMENT IN THE CLASSROOM: THE EFFECTS OF TANGIBLE AND SOCIAL REINFORCEMENT ON THE EDUCATIONAL ACHIEVEMENT OF AMERICAN INDIAN STUDENTS

Investigator(s): Bruce A. Chadwick, Ph.D., Assistant Professor, Department of Sociology, Washington State University, Pullman, Washington 99163.

Purpose: To test hypotheses concerning the development of a school system that will permit Indian students to develop academic skills comparable to those of white middle class students.

Subjects: 60 American Indian students, ages 12 to 17, in grades 7 and 8, who attend a mission boarding school on a reservation in Washington state; and a control group of white students. The Indian sample, evenly divided by sex, consists primarily of children from impoverished broken homes caused by divorce, desertion, or death.

Methods: Data were collected during an entire academic school year. Observers behind one-way mirrors collected systematic records of the amount of time the children spent working and records of their classroom behavior. All written assignments were graded by the observer and integrated with the observed data. Interviews and questionnaires were used periodically during the year to assess various attitudes and perceptions. Comparable interview data were obtained from a control group of seventh and eighth grade white students.

Duration: June 1969-completed.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-NB-8 RURAL BLACKS IN SOUTHERN ARIZONA

Investigator(s): Victor A. Christopherson, Ed.D., Professor and Chairman, Department of Child Development and Family Relations, University of Arizona, Tucson, Arizona 85718.

Purpose: To describe rural black families in southern Arizona in terms of family composition, childrearing practices, occupational aspirations, nutritional patterns, and social behavior.

Subjects: 80 black families in rural areas of southern Arizona.

Methods: Data were collected by black interviewers in field interviews. Summaries and percentages were calculated for the data.

Findings: Results indicated that militancy increases as proximity to urban areas increases. The only state or federal program that reaches the subject population is welfare. The subjects reflected very low educational achievement and casual childrearing attitudes.

Duration: January 1971-January 1972.

Cooperating group(s): Experiment Station, College of Agriculture, University of Arizona.

29-ND-1 FACTORS AFFECTING THE PATTERNS OF DISADVANTAGED FAMILIES

Investigator(s): Glenn R. Hawkes, Ph.D., Associate Dean, Family and Consumer Sciences; and Beverly E. Bastian, M.A., Researcher, Applied Behavioral Sciences, University of California at Davis, Davis, California 95616.

Purpose: A national study to gain a broad picture of the living patterns of rural farm, nonfarm, and urban disadvantaged families in several states, in order that (1) factors affecting their lives may be recognized; (2) information critical to describe, evaluate, explain, and predict their lives may be available; and (3) guidelines to plan programs for their rehabilitation may be formulated.

Subjects: 170 Mexican and Mexican-American homemakers, ages 19 to 65, who are mothers of dependent children and who live in one of several randomly selected housing units in a California State operated migrant facility.

Methods: A questionnaire was developed to explore three areas of interest: (1) family value patterns, (2) family interaction patterns, and (3) family resource procurement and use. Data were collected by specially trained interviewers who visited the homes of the selected women and invited their participation in the project. The interviewers were recruited from among the bilingual female residents of the migrant facilities to help minimize language and cultural barriers. A special bilingual adaptation of another regular questionnaire was used. A $4.00 fee was paid for participation to compensate for the respondent's time. Statistical treatment will include (1) percentage distributions for each state and pooled information for rural, urban, and special group areas, (2) two-way frequency distributions with degree of disadvantagement as the independent variable for rural, urban, and special group areas, and (3) multiple regression analysis of the most critical variables for rural and urban areas.

Duration: July 1967-June 1972.

Cooperating group(s): Agricultural Experiment Stations in California, Hawaii, Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, Nevada, Ohio, Texas, Vermont, and Wisconsin.

29-NG-1 A CROSS-CULTURAL STUDY OF THE DEVELOPMENT OF EMPATHY IN VERY YOUNG CHINESE AND AMERICAN CHILDREN

Investigator(s): Helene Borke, Ph.D., Associate Professor, Department of Psychology and Department of Education, Carnegie-Mellon University, Pittsburgh, Pennsylvania 15213.

Purpose: To compare the early development of empathic awareness in children from different cultural backgrounds.

Subjects: 288 Chinese and 288 American children, ages 3 to 6, equally divided by sex; half of each group was from middle class homes and half was from disadvantaged homes.

Methods: The subjects were asked to identify the emotional reactions of people in stories describing social situations. Several steps were taken to insure that the instrument used would be fairly free of cultural bias. Chinese and American kindergarten children were first asked to describe the kinds of situations that make them feel happy, sad, afraid, and angry. Stories constructed from responses common to both groups of kindergarten children were then administered to Chinese and American second graders. Only those stories were included in the instrument to which a high proportion of children from both cultural groups responded in the predicted direction. Each child was tested individually. An analysis of variance was used to analyze the data.

Findings: Sex and cultural background factors showed negligible effects. Differences due to age, social class, and affective category were significant at the 1 percent level in both cultural groups. Very young Chinese and American children were equally skillful at identifying social situations that evoke different kinds of affective responses in other people. The similar early development of interpersonal sensitivity in children of both sexes and from widely divergent cultural and social backgrounds supports the hypothesis that empathy is probably a universal human characteristic.

Duration: September 1969-December 1971.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-NG-2 A CROSS-CULTURAL STUDY OF MECHANICAL APTITUDE IN SEVERAL INDIAN GROUPS

Investigator(s): Alan D. Bowd, Ph.D., Assistant Professor, Department of Educational Psychology, University of Manitoba, Winnipeg, Manitoba, Canada; and Philip E. Vernon, Ph.D., Professor of Educational Psychology, University of Calgary, Calgary, Alberta, Canada.

Purpose: To assess the roles of cultural and environmental influences on absolute levels of mechanical skills and on the factorial structure of mechanical aptitude of Indian boys.

Subjects: 137 Indian boys, ages 12 to 14, selected irrespective of grade level achieved; and a control group of 35 white boys.

Methods: A test battery was administered to measure factorial components of mechanical aptitude, vocabulary, general intelligence, mechanical knowledge and comprehension, spatial ability, and dexterity. The tests were culture-reduced and modified for the age range tested. Background data were obtained by questionnaires administered to each subject.

Findings: Factorial composition of mechanical aptitude was found to differ across groups, although comparison was possible by the presence of common general and spatial factors. The Indian children's general mechanical ability was judged to be equal to the white children's ability. The Indian children's inferior performance on some tests was attributed to their comparative lack of verbal skills.

Duration: September 1969-June 1971.

Cooperating group(s): Alberta Human Resources Research Council; Calgary Public School Board.

29-NG-3 EDUCATION PROGRAMS FOR PUERTO RICAN STUDENTS

Investigator(s): Francesco Cordasco, Ed.D., Professor, Department of Education, Montclair State College, Upper Montclair, New Jersey 07043; and Eugene Bucchioni, Ph.D., Associate Professor, Department of Education, Lehman College, City University of New York, New York, New York 10021.

Purpose: To evaluate and make recommendations for education programs for Puerto Rican students.

Subjects: Elementary and secondary school students.

Methods: An analysis of district schools will be made to evaluate programs relative to the treatment of the culture and history of Puerto Rico, test scores, and reading levels of Puerto Rican children.

Duration: October 1971-December 1971.

Publications: A report is available from Board of Education, Jersey City, New Jersey.

EDUCATIONAL FACTORS AND SERVICES

General Education

29-OA-1 EARLY EDUCATIONAL STIMULATION OF CHILDREN 3 TO 9 YEARS OF AGE

Investigator(s): Lacy D. Powell, Ed.D., Director of Research, Clayton County Board of Education, 120 Smith Street, Jonesboro, Georgia 30236.

Purpose: To assess the long-term impact of continuous educational stimulation on children who enter a preschool project at age 3 and continue in the project until age 9.

Subjects: 375 boys and girls, ages 3 to 9; and a control group of 60 children, age 6, who have preschool experience. The children were selected to approximate a national cross-section with respect to age, sex, socioeconomic status, verbal ability, and ethnic group.

Methods: The preschool children attended classes where structured materials in the areas of arithmetic, art, music, language arts, science, and social studies were presented for 2 1/2 hours daily for 4 days each week. Teaching teams consisted of three adults, and the student-teacher ratio was approximately 6 to 1. The children not in the preschool project were selected at the end of the first 3 years to act as controls. The control group was exposed to the same teaching patterns and materials as the preschool group. The Metropolitan Readiness Test scores were compared at the beginning of the first grade for the groups. The California Test of Basic Skills scores will be compared for the groups at the end of third grade. T-tests will be used to determine significance of difference between scores for the two groups.

Findings: Preschool attendance virtually eliminated the low risk categories on the Metropolitan Test, even for children who were low borderline normal as judged by the Stanford-Binet or Peabody Picture Vocabulary Test.

Duration: September 1966-June 1972.

Cooperating group(s): University of Georgia Research and Development Center, Athens, Georgia; Office of Education, U. S. Department of Health, Education, and Welfare.

29-OA-2 BROOKLINE EARLY EDUCATION PROJECT

Investigator(s): Burton L. White, Ph.D., Associate Professor, Graduate School of Education, Harvard University, Cambridge, Massachusetts 02138.

Purpose: To design alternative packages of educational services that differ in cost and complexity; and to provide evidence of the value of these different approaches to early education.

Subjects: Children, ages 0 to 4 1/2, who reside in Brookline, Massachusetts.

Methods: Systematic comparisons of these programs in operation over a 3-to 4-year period will yield cost-benefit data, so that municipal agencies with different levels of resources may determine (1) the amount of a town's fiscal resources to invest in early education, (2) which programs to implement, and (3) what educational effects they may expect.

Duration: September 1971-May 1972.

Cooperating group(s): Brookline public schools; Carnegie Corporation; Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

29-OB-1 CONTRACT COUNSELING

Investigator(s): James D. Fenn, M.S., School Psychologist, Pittsfield Public Schools, Perl Street, Pittsfield, Massachusetts 01201.

Purpose: To improve the total functioning of high school underachievers through a counseling program using written contracts.

Subjects: 40 underachieving boys in grades 10 and 11 from two urban high schools.

Methods: The boys were divided equally into experimental and control groups. Four measures of adjustment were considered: (1) report card grades, (2) school attendance, (3) personality ratings judged by teachers, and (4) students' attitudes towards the learning atmosphere. Personality ratings were measured by the Personality Record and the Learning Atmosphere Attitude Scale. The experimental group participated in 10 weekly counseling sessions designed to help the students improve in their selected goal area, which was chosen from a list of 10 alternatives. The student contracted to meet with his counselor for one academic period each week during the 10-week marking period. The counseling sessions were devoted to the completion of 10 assignments directed towards improving the student's selected area of weakness.

Findings: Tentative findings suggest that the contract method can be effective in specific situations. One or more of the criterion variables can be significantly improved.

Duration: February 1971-May 1971.

Cooperating group(s): Pupil Personnel Services, Pittsfield Public Schools.

29-OD-1 THE RELATIONSHIP BETWEEN PARTICIPATION IN SPORTS AND THE MORAL AND POLITICAL SOCIALIZATION OF HIGH SCHOOL YOUTH IN CHILE

Investigator(s): Barry E. Stern, Ph.D., Assistant Professor, Department of Education, Oberlin College, Oberlin, Ohio 44074.

Purpose: To determine how, and to what extent, participation in sports is a possible source of political learning.

Subjects: 1,500 male students from nine public and four private high schools in Santiago, Chile; half in their first year of high school and half in their third year.

Methods: The schools were selected by cluster sampling procedures. The dependent variables included confidence in politicians, willingness to use legal means to effect change, political tolerance, and moral judgment. Students answered a questionnaire designed to measure sports participation and political socialization variables, and information on background and related factors. In order to measure maturity of moral judgment, an in-depth interview was developed and administered to 5 percent of the subjects. Bivariate and multivariate statistical procedures were used to determine the relationships among and between the predictor variables. A reduced number of critical variables was fitted into path analysis models.

Findings: Statistically significant yet fairly weak relationships were found between participation in sports and willingness to utilize legal means to effect change and political confidence. These relationships are stronger in the private schools and among third year high school students. No relationship was found between sports participation and moral judgment.

Duration: November 1969-November 1971.

Cooperating group(s): Physical Education Institute, University of Chile; Center for Educational Research and Professional Improvement, Ministry of Education, Chile; U. S. National Academy of Sciences; Center for Research in International Studies, Stanford University.

29-OD-2 THE TEACHING OF GYMNASTICS IN THE SECOND YEAR OF THE SECONDARY SCHOOL AND THE EIGHTH YEAR OF THE COMPREHENSIVE SCHOOL

Investigator(s): Sten Henrysson, Professor; Lars-Magnus Engstrom; and Gudrun Hedberg, Institute of Education, Umea School of Education, Umea Universitet, S-901 87 Umea, Sweden.

Purpose: To obtain information on gymnastic education in Sweden and on the attitude of pupils towards instruction and spare time physical training.

Subjects: 2,144 students in eighth school year gymnastics classes; 920 students in second year secondary school gymnastics classes; and 225 teachers of gymnastics. Subjects reside in four counties in Sweden.

Methods: Data were gathered through questionnaires from teachers and pupils of gymnastics. The questionnaire for the teachers included questions on their background, the content of the gymnastic activities, their views on marking and the evaluation of merit in gymnastics, and the occurrence of individualized instruction. The student questionnaire included questions on their background, their interest in gymnastics compared to other subjects, their attitude towards various exercises, and their spare time athletic activities.

Duration: 1967-1969.

29-OE-1 INVESTIGATIONS OF NURSERY SCHOOL METHODOLOGY

Investigator(s): Stina Sandels, Professor; Anita Soderlund, B.A.; and Lennart Spindler, Institute of Child Psychology, Stockholm School of Education, S-100 26 Stockholm 34, Sweden.

Purpose: To describe and measure the effects of a nursery school on individual children during the course of two school terms, and later, during the children's first term at school.

Subjects: 13 nursery school students: 7 males and 6 females, ages 5 and 6, all but three of whom have previously attended a nursery school.

Methods: Daily observations were made in the nursery school. At the beginning of the autumn term measurements were made and repeated at the end of the term or at the end of the spring term. During the course of the two terms measurements were made of the children's knowledge of traffic sign recognition, reading ability, vocabulary, and memory; followed by the application of special stimuli; and the measurement of the effects of the stimulation. During the autumn term continuous observations were made of the children in the school environment to get an impression of the child's transition from nursery school to regular school. At the end of the autumn term, the children and their mothers were interviewed on the effects of the children's transition from nursery school to the regular school.

Duration: 1968-continuing.

29-OF-1 DEVELOPMENT OF PREDICTIVE INDICES FOR ACHIEVEMENT OF CHILDREN IN AN EXPERIMENTAL INTERVENTION PROGRAM IN HARLEM: EXTENDED ANALYSES OF COGNITIVE, FAMILIAL, PERSONALITY, AND SOCIAL-BEHAVIORAL DATA FROM TWO ONGOING RESEARCH INVESTIGATIONS

Investigator(s): Florence Schumer, Ph.D., Senior Research Scientist; and Cynthia P. Deutsch, Ph.D., Research Professor, Institute for Developmental Studies, School of Education, New York University, 239 Greene Street, New York, New York 10003.

Purpose: To investigate the need for predictive studies of the outcomes of special educational programs, and, based on the outcomes of two ongoing research investigations, to suggest models for intervention programs.

Subjects: 127 third and fourth grade boys and girls enrolled in the Institute for Developmental Studies' special education classes.

Methods: Several research instruments have been employed, as well as developed, in two ongoing research projects. They include behavioral measures of independence, ratings of independence, sociometric status, creativity measures, personality measures, objective measures of language behavior, and ratings of communicational and cognitive style. A detailed family interview, focused on communicational and language systems, has been constructed and administered to all members of the family simultaneously. The research design involves a careful examination of the specific relationship of each measure to each other measure and to various criterion achievement measures through correlational methods, to provide a basis to predict achievement in a ghetto population.

Duration: June 1970-August 1971.

Cooperating group(s): Institute for Developmental Studies, School of Education, New York University; Office of Child Development, U. S. Department of Health, Education, and Welfare.

Publications: Final Report, *An exploration of transfer of independent behavior from enrichment classrooms in Harlem to a non-classroom behavioral situation*, OEO Contract No. B89-4612A; and Final Report, *A study of familial, background, and cognitive style characteristics of relatively successful and unsuccessful learners (determined longitudinally) in a Harlem program*, OEO Contract No. B89-4590 are available from the investigators.

29-OF-2 CROSS-IDENTIFICATION AND MATERNAL ATTITUDES AS FACTORS AFFECTING LATENCY AGE MALE'S SCHOOL LEARNING AND BEHAVIOR

Investigator(s): Donald James Sorensen, Ph.D., School Psychologist, Torrance Unified School District, 2335 Plaza del Amo, Torrance, California 90509.

Purpose: To investigate (1) the relationship between academic achievement and behavioral adjustment of male, fourth and fifth grade students and identification with their mothers; (2) the relationship between the mother's demand for academic production and behavior; (3) maternal expression of negative feelings while helping the child with schoolwork in relation to academic achievement and behavior; and (4) the student's identification of reading or arithmetic as masculine or feminine and its relation to academic achievement.

Subjects: 142 fourth and fifth grade boys from three schools.

Methods: Lorge-Thorndike Verbal Intelligence Test, Devereux Elementary School Behavior Rating Scale, Arithmetic-Reading Sections of the Comprehensive Test of Basic Skills, Student Family Drawing Questionnaire and Semantic Differential were administered to all subjects. The parent of each child completed a parent questionnaire. Analysis of variance two- and three-factor designs were used to test the hypotheses.

Findings: The hypotheses that there should be a significant relationship between boys who relate to their mothers more than their fathers and academic achievement, and between boys who relate to their mothers more than their fathers and behavior adjustment, were not supported. The hypothesis that a boy who experiences parental demand for academic achievement will not do as well as a boy not experiencing parental demand, was supported at the .01 level for reading and .05 level for arithmetic achievement. The hypothesis that a boy who experiences negative emotional expressions from his mother while doing homework together will not do as well academically as one who does not experience negative emotional expression was supported for reading (.01), but not for arithmetic. The hypothesis that a boy who experiences maternal demands for homework production will exhibit observable behavior deviations in school was not supported, while the hypothesis that a boy who experiences negative emotional expressions from the mother while involved in the homework process will manifest observable behavior deviations in school was supported (.01). The hypothesis that a boy who identifies academics as feminine will not do as well as a boy who identifies academics as masculine was supported for arithmetic (.05), but not for reading. The hypothesis that a boy identifying academics as feminine will exhibit behavior deviations was not supported for reading, but was supported for arithmetic (.01).

Duration: February 1970-February 1971.

29-OF-3 A PROGRAM TO IMPROVE STUDY HABITS OF HIGH SCHOOL STUDENTS

Investigator(s): Mary B. Harris, Ph.D., Assistant Professor; and Fred Ream, B.A., Department of Educational Foundations, University of New Mexico, Albuquerque, New Mexico 87106.

Purpose: To determine if a series of lessons in behavior modification will improve the study habits and grades of high school students.

Subjects: 41 junior and senior high school students of both sexes who attended summer school.

Methods: The students were given data sheets to record study behavior and information on the importance of the awareness of one's behavior in changing habits. Three experimental classes were also given a series of written lessons that discussed the techniques of changing behavior and applications to study habits, taking notes, and examination skills. The techniques included positive reiforcement, punishment, stimulus control, contract systems, and chaining. A fourth class served as a control; the dependent measure was summer school grades.

Findings: Those who handed in the data sheets received higher grades probably because of their motivation rather than the program. Generally the students were not motivated, did not follow instructions, and probably did not benefit from the program.

Duration: June 1971-August 1971.

Cooperating group(s): Albuquerque public school, Highland High School.

29-OG-1 SCHOOL REFUSERS AND THEIR FAMILIES: SCHOOL PHOBIA AND TRUANCY REVISITED

Investigator(s): Ellen Paula Daniels, Ed.M., Staff Psychologist, Department of Psychiatry, Bullfinch #7, Massachusetts General Hospital, Fruit Street, Boston, Massschusetts 02114.

Purpose: To examine the perceptual-cognitive styles of school phobics and truants; and to investigate familial factors including degree of parental ambivalence, the degree of individuation the parent allows the child, and the parents' history of response to conflict and the responses they encourage in the child.

Subjects: 12 school phobics and 12 truants, males, ages 8 to 11, from lower socioeconomic groups.

Methods: The school phobics will be chosen on the basis of nondisease related somatic symptoms and the absence of such behaviors as lying, stealing, destroying property, and truancy; the truants show opposite symptom patterns. A *well* (without a phobia or truancy problem) older male sibling will serve as a control for his identified patient younger brother. Parents (and grandparents, when possible) will be given an intelligence test. The subjects and controls will take the same psychological test battery to measure perceptual-cognitive style and self-image. The parents will be asked to respond to both patient and *well* child to see if any difference in perception and patterns of treatment exist. For measures of parental ambivalence and empathy, the parent will predict the children's choices to specially devised checklists for Rorschach and Thematic Apperception tests, with the parents' responses as the baseline. The child will respond to the same checklist.

Duration: October 1971-June 1972.

Cooperating group(s): Department of Child Psychiatry, Pediatrics Clinic, Family Evaluation Unit, Massachusetts General Hospital.

29-OG-2 INCREASING INDIVIDUAL ON-TASK BEHAVIOR IN THE CLASSROOM THROUGH THE USE OF REINFORCEMENT

Investigator(s): Jean H. Jarvis, B.A., Teacher, Torrance Unified School District, 2335 Plaza del Amo, Torrance, California 90509.

Purpose: To increase on-task behavior of one student in a 45-minute-per-day English class.

Subjects: One eighth grade boy, age 15, who was often absent and scored F grades on all tests.

Methods: At the beginning of the program the student's on-task behavior amounted to between 35 and 40 percent of his time in school. During the rest of the time, he daydreamed. The subject was observed by the teacher at varying times during nonoral work (a timing device was used). Each observation which showed on-task behavior earned a check. The checks could later be exchanged for a variety of rewards including magazines.

Findings: In a 5-week period, the student's on-task behavior increased to 90 percent, his test grades averaged C, his oral participation increased from zero to often, and attitudinal and social improvements were observed. Two magazines on the subject of motorcycles were earned with 25 checks each. The student's on-task behavior was maintained after the rewards were withdrawn.

Duration: March 1971-May 1971.

29-OG-3

RELATIONSHIPS AMONG FAMILY FACTORS, LANGUAGE ABILITY, BEHAVIORAL ADJUSTMENT, ACHIEVEMENT, AND TEACHER PERCEPTION OF ADJUSTMENT OF HEAD START MEXICAN-AMERICAN STUDENTS

Investigator(s): James M. Stedman, Ph.D., Chief Psychologist, Community Guidance Center, 2135 Babcock Road, San Antonio, Texas 78229.

Purpose: To determine the relationships among family factors, language ability, behavioral adjustment, achievement, and teacher perception of adjustment of Head Start Mexican-American children.

Subjects: 133 Mexican-American boys and girls, ages 5 to 6, who participate in a Head Start program.

Methods: See *Research Relating to Children, Bulletin 23*, January-August 1968, Study 23-LA-3, p. 84. Pearson correlations will be measured between various child ratings (behavioral adjustment, achievement, and teacher perception of adjustment) and language measures in English and Spanish. Tests of significant differences will be made for correlations for Mexican-American and non-Mexican-American teachers.

Findings: Results indicate that a moderate relationship exists between English language ability and teacher ratings. No relationship was found between the teacher ratings and Spanish language ability. No differences were found between Mexican-American and non-Mexican-American teachers.

Duration: 1968-1972.

Cooperating group(s): U. S. Office of Economic Opportunity.

29-OG-4

EMANCIPATION STUDIES OF INTERRELATIONSHIPS BETWEEN EMANCIPATION AT HOME AND ADJUSTMENT AT SCHOOL

Investigator(s): Carroll Davis, M.A., Research Associate, Institute of Child Study, University of Toronto, Toronto, Ontario, Canada.

Purpose: To study dependence-independence as a basic factor in parent-child interaction in various areas of the child's life at three successive ages; and to relate the patterns of interaction to measures of school adjustment and achievement.

Subjects: Approximately 100 boys and girls, ages 3 to 8, who attend the Institute of Child Study Laboratory School; and their parents, who represent middle to upper middle class groups.

Methods: The instruments used to collect data included emancipation assessment scores from interviews of parents of children at three age levels; the Picture Tests of Independence, designed to measure the child's feelings about acting independently; teacher ratings of classroom adjustment; the Anton Brenner Developmental Gestalt Test of School Readiness; the Metropolitan Academic Achievement Test; the Stanford-Binet Intelligence Scale; and sociometric tests.

Findings: Parent-child interaction was found to vary in different areas of the child's life; a parent is seldom over controlling or over permissive in all areas. Sex differences appear in the Picture Test of Independence scores and the teacher ratings of classroom adjustment.

Duration: 1963-1972.

Cooperating group(s): Ontario Mental Health Foundation.

Publications: Northway, M. L. The stability of young children's social relations. *Educational Research*, November 1968.

29-OH-1 DISADVANTAGED YOUTHS IN RURAL IOWA

Investigator(s): Kent B. Winter, Ph.D., Principal, University High School, Iowa City, Iowa 52240; and L. A. Van Dyke, Ph.D., Associate Dean, College of Education, University of Iowa, Iowa City, Iowa 52240.

Purpose: To ascertain the proportion of disadvantaged high school youths in rural communities in Iowa; and to study their aspirations, attitudes, community and family backgrounds, and educational progress compared to other youths in the same age group and communities.

Subjects: 330 disadvantaged youths (eligible to participate in the Title I programs under the Elementary and Secondary Education Act); and 330 nondisadvantaged youths currently enrolled in secondary schools in four rural Iowa communities.

Methods: Four rural counties, two in southern Iowa and two in northern Iowa, were selected at random. Questionnaires and inventories were administered and interviews were conducted with the subjects. Dropouts in the same age group were also studied. The program, faculties, and facilities of 12 high schools in the four counties were studied. Quantitative data were presented by total numbers and percentages.

Findings: Disadvantaged rural youths in Iowa fall far below other youths in educational progress, level of aspirations, and level of motivation to succeed. The percentage of disadvantaged is twice as high in the southern as in the northern rural counties of Iowa.

Duration: September 1970-June 1971.

Cooperating group(s): Iowa State Department of Public Instruction.

Publications: *Dissertation Abstracts*, November 1971, 32, Section A. Order No. 71-30, 508.

29-OH-2 SCHOOL ACHIEVERS FROM A DEPRIVED BACKGROUND: 6 YEARS LATER

Investigator(s): Judith W. Greenberg, Ph.D., Assistant Professor; and Helen H. Davidson, Ph.D., Professor, Department of Education, City College of New York, Convent Avenue and 139th Street, New York, New York 10031.

Purpose: To follow-up a sample of disadvantaged children, originally studied in grade 5, who are now in the junior year of high school, to assess their current educational and personal functioning and goals.

Subjects: The original study included 160 children from lower class Negro groups who attended urban ghetto schools: 80 high achievers and 80 low achievers, equally divided by sex. Of the original sample, 53 children have been located by mail, and 26 have been interviewed.

Methods: Interviews of 1 1/2 to 2 hours were conducted with each subject and covered academic plans, vocational plans, school experiences, out of school activities, and family relationships.

Duration: November 1970-September 1972.

29-OI-1 COMPARISON ON THE PARENT BEHAVIOR INVENTORY BETWEEN POTENTIAL DROPOUTS AND THEIR PARENTS AND A CONTROL GROUP AND THEIR PARENTS

Investigator(s): Ruth R. Money, M.A., Student, California State College at Long Beach, 6101 East Seventh Street, Long Beach, California 90801.

Purpose: To test the hypotheses that (1) differences between mother and father would be greater in the perception of the potential dropouts, (2) potential dropouts would see themselves as overmothered and underfathered, and (3) generation gap in perception would be greater in the families of the potential dropouts.

Subjects: 225 subjects: 75 high school boys, ages 15 to 18, from two-parent families in a middle class suburban school district with a population over 100,000; 75 mothers and 75 fathers. The experimental group was composed of potential dropouts; and a control group represented a random sample of all other boys from two-parent families.

Methods: Schaefer's Parent Behavior Inventory (short form) was used. Boys were surveyed in groups in school, and parents were interviewed in their homes. Scores were analyzed by the Mann-Whitney Test, correlation coefficients, and factor analyses. A representative sample from a well defined population was used as the control group for comparison. The parents' perception of their own behavior was contrasted with their sons' perception of their parents' behaviors. The potential dropout group was used as a group with a high risk of delinquency.

Findings: Findings supported hypotheses (1) and (3). The mothering and fathering could be more accurately described by other terms than those used in hypothesis (2). In the control group, both mothers and fathers were seen by themselves and by their sons as high in acceptance and sharing in control. The potential dropouts' parents revealed a disparity in their modes of mothering and fathering. (The mother was seen as controlling; the father was either accepting and nonenforcing or hostile and detached. If the father were accepting, the mother was hostile; if the father were hostile, the mother was accepting. The parents were described as having compensatory rather than cooperative behavior.) The parents of the potential dropouts showed an agreement with the appraisals of their sons in the pattern, although not the extent, of their behavior.

Duration: January 1970-May 1971.

Cooperating group(s): Torrance Unified School District; Los Angeles County Probation Department, Research and Information Systems Office; California State College at Long Beach.

29-OJ-1 PARENT-TEACHER CONFERENCES

Investigator(s): Edna Jean Horne, B.A., Teacher, Torrance Unified School District, Arlington Elementary School, 17800 Van Ness Avenue, Torrance, California 90504.

Purpose: To determine if students should participate in parent-teacher conferences.

Subjects: 31 fourth grade students: 16 boys, 15 girls, ages 9 to 10; and their parents.

Methods: The study was concerned with the traditional parent-teacher conference, student participation in the conference, and a description of a selected experiment that involved student participation in the conference. A questionnaire was used to evaluate the effectiveness of the experiment.

Findings: The parent-pupil-teacher conference was considered a success. The conferences were improved when the students participated part-time. The parents were cooperative and seemed satisfied since they were informed of their children's progress. The students expressed positive feelings when they were allowed to participate in the conference.

Duration: April 1971-May 1971.

29-OK-1 FACTORS CONTRIBUTING TO ADJUSTMENT AND ACHIEVEMENT IN RACIALLY DESEGREGATED PUBLIC SCHOOLS

Investigator(s): Harold B. Gerard, Ph.D., Professor; and Norman Miller, Ph.D., Research Psychologist, Department of Psychology, University of California at Los Angeles, Los Angeles, California 90024.

Purpose: To determine the antecedents and concomitants of successful integration of Negro, Mexican-American, and white children in a public school system.

Subjects: Approximately 1,800 Negro, Mexican-American, and white children, male and female, from kindergarten through grade 6.

Methods: The project assesses both long-term and short-term effects of desegregation. The major indices of success are academic achievement and emotional adjustment. The study focuses on three antecedents or concomitant factors that may affect these dependent factors: characteristics of the child, his parents, and the school. The design is basically a 7-year natural time series experiment consisting of a premeasurement and six successive postmeasurements. Selected matched control groups will provide baselines to evaluate the effects of community sensitization, repeated testing of the sample, and general sociocultural changes occurring over the time span of the study. The basic research strategy is extensive multiple measures of all variables: achievement, personality, and adjustment of the child; parental values and attitudes; and school and teacher characteristics.

Duration: June 1967-August 1973.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare; National Science Foundation.

Specific Skills

29-PA-1 TEACHING PROBABLILITY IN ELEMENTARY SCHOOL: AN EXPLORATORY STUDY

Investigator(s): Joella H. Gipson, Ph.D., Specialist in Education, Department of Education, Curriculum Laboratory, University of Illinois, 1210 West Springfield, Urbana, Illinois 61801.

Purpose: To develop sequenced lessons of two fundamental concepts of probability (finite sample space and probability of a simple event), and to determine children's successes and difficulties in learning these concepts.

Subjects: Eight students, ages 8 to 11.

Methods: A case study approach was employed.

Findings: Children in grades 3 and 6 can learn these two fundamental concepts of probability; therefore, it is appropriate to introduce selected probability concepts at the grade 3 level.

Duration: Spring 1970-spring 1971.

Cooperating group(s): University of Illinois Committee on School Mathematics.

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29-PA-2 INDEPENDENT STUDY PROGRAM FOR ACADEMICALLY TALENTED STUDENTS IN ADVANCED MATHEMATICS

Investigator(s): Evelyn Lemon, M.A.T.; Dale Klein, M.S.; John Conway, M.A.T.; and Neil Griffith, B.A., Mathematics Department, South High School, 4801 Pacific Coast Highway, Torrance, California 90505.

Purpose: To develop a program to enable outstanding students to proceed with their mathematics studies at their own rate.

Subjects: Ten male students, ages 15 to 17.

Methods: The program allows students, who would not be able to follow the normal sequence of courses, to complete at least 1 year of calculus before leaving high school. The subjects enrolled in calculus in September 1971, when a new group of students enrolled in algebra II in the normal program. Results will be gathered as the students complete each section of the program. Part of the measurement will be the students' success in calculus. A comparison will be made of both groups of students' scores on the Advanced Placement Mathematics Test in late 1972 or early 1973.

Findings: Initial results indicate that the students enjoy the work and adapt well to the pace of the assignments; they seem to thrive on the challenge of learning by themselves. All students are receiving A grades.

Duration: September 1970-July 1972.

Cooperating group(s): Research, Innovation, and Development Committee, Torrance Unified School District.

29-PB-1 SELF-MADE BOOKS BY AND FOR THE LANGUAGE DISADVANTAGED CHILD

Investigator(s): Karen A. Sanford, B.A., Title I Remedial Reading Teacher, Torrance Unified School District, 2335 Plaza del Amo, Torrance, California 90509.

Purpose: To improve language disadvantaged children's reading ability and visual literacy through the production of self-made books.

Subjects: Ten language disadvantaged students in random sample, ages 10-13, and 10 students in a control group.

Methods: Subjects were pre- and posttested using the Slosson Oral Reading Test and were also asked to respond orally to a photograph of the school yard. Each child in the random sample was given a camera and film to take pictures of what interested him.The photos were sorted and the children selected those to be used in individual books. Each upper grade student made, illustrated, and shared his book with primary students. Questionnaires were given to parents, teachers, and the project participants. The responses to the photographs were tape recorded for an accurate word count.

Findings: The reading level of the random sample increased 6 months in the 8 weeks of the project. Topics of photographs were most frequently people, pets, and school; topics of books included family, friends, sports, home, school, and "My Life." Project participants were eager and enthusiastic about the books, wanted to share them, and tried to improve in reading.

Duration: May 1971-June 1971.

Cooperating group(s): Research, Innovation, and Development Committee, Torrance Unified School District, Torrance, California.

29-PB-2 EFFECTS OF PICTURES ON READING ACQUISITION AND ATTITUDES ABOUT READING

Investigator(s): S. J. Samuels, Ed.D.; E. Biesbrock, Ph.D.; and P. R. Terry, M.A., Psychology Foundations, University of Minnesota, 330 Burton Hall, Minneapolis, Minnesota 55455.

Purpose: To determine the effects of pictures on reading acquisition, and to determine children's attitudes towards reading.

Subjects: Children, ages 6 and 7, in grades 1 and 2.

Methods: Repeated measures Greco-Latin Square Design and an analysis of variance will be employed.

Findings: Pictures interfere with reading, especially with lower ability students. Students prefer to read stories that contain pictures.

Duration: 1967-1972.

Publications: *Review of Educational Research*, 1970, 40.

29-PB-3 THE READING OF LITERATURE IN THE COMPREHENSIVE SCHOOL (LIGRU)

Investigator(s): Gote Klingberg, Associate Professor and Project Director; Bengt Agren, Assistant; and Monica Ågren, M.A., Department of Educational Research, Gothenburg School of Education, Nordostpassagen 27, S-413 11 Goteborg, Sweden.

Purpose: To investigate problems encountered in the instruction of literature in the comprehensive schools: the aims, methods, and evaluation of the instruction of literature.

Subjects: Swedish students in the comprehensive schools who participate in the Reading of Literature in the Comprehensive School (LIGRU) project.

Methods: Data will be collected on teaching methods employed in Sweden and abroad, and the data will be cataloged. Existing instruments for evaluation will be collected and cataloged.

Duration: 1969-1972

Cooperating group(s): National Board of Education, Sweden.

29-PB-4 INSTRUCTIONAL METHODS IN GERMAN (IMG)

Investigator(s): Ebbe Lindell, Professor; and Horst Lofgren, Licenciate in Philosophy, Institute of Education, Malmo School of Education, S-200 45 Malmo 23, Sweden.

Purpose: To investigate the conditions and methods used to teach German to Swedish comprehensive school students, and to produce a teaching system for beginning courses in German.

Subjects: Swedish pupils in comprehensive schools who participate in the Instructional Methods in German (IMG) program.

Methods: The IMG project will consist of four phases: (1) an analysis of the educational conditions (aims, pupils, and materials), (2) an analysis of the educational processes and experiments in teaching methods, (3) an analysis of the educational product with various tests, and (4) the production of teaching materials as a result of the above analyses.

Duration: 1965-1973.

Cooperating group(s): National Board of Education, Sweden.

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29-PB-5 AN INVESTIGATION OF THE EFEECTS OF A DIAGNOSTIC, PRESCRIPTIVE KINDERGARTEN PROGRAM ON THE PREDICTED READING LEVELS OF CHILDREN IDENTIFIED AS POTENTIAL READING FAILURES

Investigator(s): Peggy L. Stank, Ed.M., Educational Research Associate; and Robert B. Hayes, Ed.D., Director, Bureau of Educational Research, Pennsylvania State Department of Education, Box 911, Harrisburg, Pennsylvania 17126.

Purpose: To assess the success of a diagnostic, prescriptive kindergarten program to raise the predicted reading levels of urban kindergarten children indentified as potential reading failures; and to compare the effects of the program on the predicted reading levels of the children.

Subjects: 196 children, ages 4-9 to 6-9 (mean age 5.32), in eight kindergarten classes within two low income area schools of the Altoona Area School District in Pennsylvania.

Methods: On the basis of diagnoses, classes are divided into four instructional groups. Each group is scheduled for one 15-minute period of structured, teacher-directed instruction and three periods of independent activity at various work stations. Both teacher-directed and independent activities focus on specific areas of the language process identified by the Illinois Test of Psycholinguistic Abilities. Teacher-directed portions of instruction use Language and Thinking Packages developed by CEMREL, Inc. The control groups use the traditional kindergarten program as outlined by the Pennsylvania Department of Education. Classroom observations are conducted in both experimental and control classrooms with the Kindergarten Observation Record for Language Arts. This scale provides a record of teacher behavior and pupil responses to this behavior. The Jansky Predictive Index is used as a pre- and posttest measure of predicted reading levels.

Duration: August 1971-August 1972.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare; Altoona Area School District, Altoona, Pennsylvania.

29-PB-6 INFLUENCE OF THE CONTENT OF PRIMERS ON FIRST GRADE STUDENTS

Investigator(s): Gaston E. Blom, M.D., Professor, Department of Psychiatry and Department of Education; and Sara G. Zimet, Ed.D., Assistant Professor, Department of Psychiatry; and Director, Reading Research Project, Day Care Center, Medical Center, University of Colorado, 4200 East Ninth Avenue, Denver, Colorado 80220.

Purpose: To assess the relationships between the content of stories in two first grade reading series and variables including deviant and on-task behavior, attitude towards reading, and reading achievement.

Subjects: 30 boys and 30 girls from two first grade classes in an urban public elementary school; and their teachers.

Methods: Each class uses a different reading textbook series. Each textbook series is judged either high or low in interest appeal. Daily observations were made of the children in reading instruction for deviant and on-task behavior. Monthly observations of each teacher's fidelity to the text and classroom management behavior were compared. The tests administered at the beginning of the school year included the Murphy-Durrell Reading Readiness Analysis, the San Diego Reading Attitude Inventory (SDRAI), and the Rosenzweig Picture Frustration Study. The tests administered during the middle of the school year were the Gates-McGinnity Reading Achievement Test and the SDRAI. At the end of the year the Gates-McGinnity, the Gilmore Oral Reading Test, and SDRAI were administered, and a teacher evaluation of the reading series, and a teacher rating of students on deviant and on-task behavior were conducted. Data on records of the children's activity preference during free choice activity time and scores on classroom reading tests administered by the teacher were collected during the year.

Findings: Pretest data indicated that subjects in both first grade classes resemble each other in their reading readiness scores and in their attitudes towards reading. Both teachers studied were alike in their classroom management behavior.

Duration: September 1971-June 1972.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-PD-1 TEACHING CHILDREN ABOUT HUMAN BEHAVIOR

Investigator(s): Sheldon R. Roen, Ph.D., Associate Professor, Department of Psychology, Teachers College, Columbia University, New York, New York 10027.

Purpose: To facilitate the inclusion of the subject of behavioral science in the curriculum of elementary and junior high schools.

Subjects: Approximately 12 classes of children, grades 1 to 3; and their teachers. Children, grades 3 to 6 and 7 to 9, were interviewed for comparison.

Methods: In a graduate credit seminar about 12 practicing teachers were helped to create a curriculum on human behavior and to teach it with proper methods to their pupils. As part of the research, children at various age levels were interviewed to determine their natural interests and concerns about behavior as their interests emerged developmentally. The pupils who were taught the lessons were examined before and after their exposure to the curriculum, and control groups were followed for comparison.

Findings: Results are not available for the teaching program. For developmental interest and concern inquiry, of 12 behavioral categories, children, ages 6 to 9, are most interested in Learning and Man and least interested in Self and Community. Children, ages 10 to 13, are most interested in Self and Feelings and least interested in Community and Doing. Children, ages 13 to 16, are most interested in Feelings and Self and least interested in Countries and Community.

Duration: July 1970-August 1971.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

Special Education

29-QB-1 DRUG THERAPY IN CHILDREN WITH LEARNING DISABILITIES

Investigator(s): J. Philip Ambuel, M.D., Medical Director, Outpatient Department; and Herbert Rie, Ph.D., Chief Psychologist, Children and Youth Project 607, Children's Hospital, 561 South Seventeenth Street, Columbus, Ohio 43205.

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Purpose: To determine the effect of drug therapy on children with learning disabilities.

Subjects: 80 children, ages 7 to 9, who are academic underachievers, have normal intelligence, and have no major physical or psychological problems.

Methods: Underachieving children will be evaluated medically and psychologically and will then be placed on a drug or a placebo using a double blind cross-over technique. Results will be evaluated by parent and teacher rating scales and a number of achievement and psychological tests.

Duration: July 1971-July 1977.

Cooperating group(s): Columbus public schools.

29-QC-1 EARLY IDENTIFICATION AND REMEDIATION OF SEVERE LEARNING PROBLEMS IN ELEMENTARY SCHOOL CHILDREN

Investigator(s): James W. Barnard, Ph.D., Research Associate Professor; and Director, Program for the Study of Social Problems, School of Education, University of South Florida, Tampa, Florida 33620.

Purpose: To assist children with learning problems to achieve a level of success that would permit them to be retained in the regular classroom.

Subjects: 120 second grade boys and girls, age 7, who attend rural, urban, and suburban elementary schools, and who demonstrated little academic success in their first year of school.

Methods: The subjects were divided into 12 groups of 10 children. Six groups of the experimental subjects were instructed using an intervention package, and six groups of the control subjects did not receive such instruction. Three groups of the experimental subjects and three groups of the control subjects were instructed in regular classrooms, while the remaining three groups each of experimental and control subjects were instructed in classrooms of 10 children. Achievement, ability, and personality assessments were carried out on a pre- and posttest basis.

Duration: July 1969-January 1972.

Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; Florida State Department of Education; Hillsborough Public School System.

29-QD-1 EVALUATION OF A PROGRAM FOR REEDUCATING DISTURBED CHILDREN: A FOLLOW-UP COMPARISON WITH UNTREATED CHILDREN

Investigator(s): Laura Weinstein, Ph.D., Associate Professor, Department of Psychology, George Peabody College for Teachers, Nashville, Tennessee 37203.

Purpose: To evaluate the effectiveness of Project Re-Ed schools to improve the behavior and academic performance of emotionally disturbed children.

Subjects: 122 children in Project Re-Ed and three comparison groups: 128 problem children, 128 nonproblem children nominated by public school principals, and a stratified random sample of 384 public school children. All subjects are white boys, grades 1 to 6.

Methods: Data on the Re-Ed children were collected prior to Re-Ed training and 1 and 2 years later. Data on all groups were collected from teacher reports, school records, achievement test results, class sociometrics, parents, and community agencies on such measures as student roles, academic skills, peer acceptance, behavioral symptoms, social maturity, parental acceptance, self-concept, and social perception.

Findings: Results indicate that the Re-Ed intervention project serves to improve the school behavior and academic performance of emotionally disturbed children.
Duration: November 1966-August 1972.
Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; Cumberland House Eelementary School; Wright School; Metropolitan Nashville public schools.
Publications: Weinstein, L. Project Re-Ed schools for emotionally disturbed children: Effectiveness as viewed by referring agencies, parents, and teachers. *Exceptional Children*, 1969, 35, 703-711; Weinstein, L. Project Re-Ed schools for emotionally disturbed children: Effectiveness as viewed by referring agencies, parents, and teachers. In N. J. Long; W. C. Morse; and R. G. Newman (Eds.), *Conflict in the classroom*. (2nd ed.) Belmont, California: Wadsworth, 1971.

29-QD-2 PREVENTION-INTERVENTION PROJECT

Investigator(s): Robert P. Cantrell, Ph.D., Child and Youth Development Institute, 3420 Richards Street, Nashville, Tennessee 37215; and Richard Gardner, M.A., Nashville-Davidson County Schools, 2601 Bransford Avenue, Nashville, Tennessee 37204.
Purpose: To introduce behavioral and educational programming for emotionally disturbed children in primary grades in five Tennessee school systems.
Subjects: All children enrolled in grades 1 to 3 in 10 experimental elementary schools.
Methods: Consultation and liaison with families and other community agencies will be provided for teachers related to children they identify as having special learning or behavior problems. Interventions will be evaluated by constant videotape monitoring and classroom observation, for corrective feedback to teachers and consultants and for later evaluation. Similar data are collected in a control school in each school system.
Duration: June 1971-June 1976.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare; Nashville-Davidson County Schools; Memphis City Schools; Robertson County Schools; Kingsport City Schools; Hamilton County Schools; Child and Youth Development Institute.

29-QE-1 THE DEVELOPMENT OF CULTURALLY DEPRIVED CHILDREN

Investigator(s): R. L. Schiefelbusch, Ph.D.; and R. V. Hall, Bureau of Child Research, University of Kansas, 9 Bailey Hall, Lawrence, Kansas 66044.
Purpose: To study the developmental functions of culturally deprived children.
Subjects: Disadvantaged Negro and middle class Caucasian preschool children; and predelinquent junior high school boys of low socioeconomic status.
Methods: The research will include two areas of study: preschool intervention research and achievement motivation research. The preschool intervention research will include (1) measuring the spontaneous language of disadvantaged Negro and middle class Caucasian preschool children, (2) the development of intervention procedures that produce more complex, spontaneous language in disadvantaged preschool children, and (3) an investigation of other language skills. The achievement motivation research will include (1) studies of incentives in remediation, (2) the development and evaluation of an automated remedial

environment, (3) the extension of the token reinforcement research to remediation of behavioral deficiencies of predelinquent boys from low income faimilies, (4) an analysis of the effects of reinforcement contingencies arranged for increasing academic performance and appropriate classroom behavior, and (5) an extension of the research methodology and modification techniques to the remediation of severely deviant development. Studies of inappropriate classroom behavior will be undertaken through an evaluation of the effects of teacher attention and other contingencies on individual and group behaviors of elementary pupils. Reliable recording procedures and behavior modification methods, which can be carried out by school personnel, will be developed. The achievement motivation study will include (1) an evaluation of systematic reinforcement procedures in the junior high school, (2) the analysis of parent-pupil home tutoring procedures, and (3) the development of a program for underachieving high school youth.

Duration: October 1970-September 1971.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-QH-1 CENTER FOR RESEARCH AND DEMONSTRATION IN THE EARLY EDUCATION OF HANDICAPPED CHILDREN

Investigator(s): George Sheperd, Ed.D., Center Director and Associate Professor; Barbara Bateman, Ph.D., Professor; Hill Walker, Ph.D., Assistant Professor; Helen Simmons, Ph.D., Assistant Professor; Joe Cobb, Ph.D., Assistant Professor; Jerald Patterson, Ph.D., Professor; and Wayne Lance, Ed.D., Associate Professor, Center for Research and Demonstration in the Early Education of Handicapped Children, Department of Special Education, University of Oregon, Clinical Services Building, Eugene, Oregon 97403.

Purpose: To conduct a multiplicity of research projects relevant to young handicapped children.

Subjects: All types of handicapped children, ages 0 to 9.

Methods: Various methods are employed depending upon the project.

Duration: December 1969-continuing.

Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; National Coordinating Center, Central Midwestern Regional Educational Laboratory, St. Ann, Missouri.

29-QH-2 THE EFFECT OF A PROGRAM OF GROSS BODY MOVEMENT UPON SELECTED ABILITIES IN CHILDREN WITH LEARNING DIFFICULTIES

Investigator(s): Bryant J. Cratty, Ed.D., Professor and Director, Perceptual-Motor Learning Laboratory, Department of Physical Education, University of California at Los Angeles, Los Angeles, California 90024.

Purpose: To determine the effects of an enrichment program of active learning games upon selected prereading abilities of first grade children with learning difficulties.

Subjects: 120 Afro-American first graders and 84 Mexican-American first graders from inner city schools of the Catholic Archdiocese of Los Angeles.

Methods: During the first school semester 12 low potential children were identified within each school, and, using active learning games, six children were given 1 hour a day (5 days a week) special practice in acquiring letter concepts and academic operations. The remaining six children served as controls during the first semester. At the completion of the semester, scores were compared. At the beginning of the second semester, groups switched, and additional scores were compared at the end of the second semester.

Findings: There were no significant differences between IQ measure and the six tests used in the battery. There was improvement from the first to the second and from the second to the third testing. During the time a subgroup was exposed to academic enrichment via learning games, significant improvement in 5 out of 12 measures was seen. There was more significant improvement in the second half of the school year. The most marked improvements were observed in impulse control, verbal identification of geometric patterns, and verbal identification of letters of the alphabet.

Duration: 1969-1975.

Cooperating group(s): Joseph P. Kennedy, Jr. Foundation; Los Angeles Catholic Archdiocese; Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: Cratty, B. J. and Szczepanik, Sister M. *The effects of a program of learning games upon selected academic abilities in children with learning difficulties.* Los Angeles: University of California, Perceptual-Motor Learning Laboratory, 1971.

29-QH-3 THE GROWTH OF COGNITIVE ABILITIES IN YOUNG CHILDREN

Investigator(s): Marion S. Blank, Ph.D., Associate Professor; and W. H. Bridger, Department of Psychiatry, Albert Einstein College of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461.

Purpose: To clarify the role of mediation in both theoretical and applied problems of learning in children, and to explore the reasons for the limitations in cross-modal learning (CML) that have been reported in children with learning disorders.

Subjects: Deaf and hearing preschool age children and retarded readers from various socioeconomic backgrounds.

Methods: Experimental techniques that involve paradigms of CML will be used extensively, since the transmission of information across sensory modalities is uniquely developed in man. A cross-versus intermodal reaction time comparison and a cross-modal matching of visual-auditory equivalences will be made. Comparisons will be made of CML among retarded readers from various socioeconomic groups to determine whether similar basic deficits are present in a wide range of the population of learning disorders. Mechanisms will be proposed to explain failures in CML when such failures occur, and methods will be devised for training children in the hypothesized areas of weakness.

Duration: May 1971-April 1972.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

SOCIAL SERVICES

29-RA-1 AN INTAKE OUTLINE AS A GUIDE IN DECISION MAKING

Investigator(s): Ann W. Shyne, Ph.D., Director of Research; and Michael Phillips, M.S.S., Research Associate; Child Welfare League of America, Inc., 67 Irving Place, New York, New York 10003.

Purpose: To increase the soundness and efficiency of decision making in child welfare agencies, and to insure that all information important to making decisions in relation to placement is initially obtained.

Methods: The project entails four phases: (1) an analysis of factors associated with placement decisions in public child welfare cases on which data were previously gathered (see *Research Relating to Children, Bulletin 25*, April-December 1969, Study 25-RG-1, p. 97); (2) the development and pretest of a tentative intake outline in another agency; (3) judgments of expert practitioners on pretest cases will be tested against the outline; and (4) the instrument will be revised and field tested in two public agencies.

Duration: November 1970-October 1972.

Cooperating group(s): Community Services Administration, Social and Rehabilitation Service, U. S. Department of Health, Education, and Welfare; Baltimore County Department of Social Services.

Publications: *Factors associated with placement decisions in child welfare* (Report on Phase 1). New York: Child Welfare League of America, Inc., Fall 1971. $1.50.

29-RA-2 PROBATE COURT JUDGES AND CHILD SERVICES IN THE STATE OF CONNECTICUT

Investigator(s): Seymour Warkov, Ph.D., Professor, Department of Sociology, University of Connecticut, Storrs, Connecticut 06268.

Purpose: To examine judges' views concerning adoption, guardianship, child abuse, and current legislation pertaining to children.

Subjects: 125 probate court judges in Connecticut.

Methods: Questionnaires were mailed to the subjects, and 100 responses have been received to date. Data were gathered on the subjects' backgrounds and the social characteristics of various Connecticut communities for comparison of opinions and perceptions of child services.

Duration: July 1971-June 1972.

Cooperating group(s): Office of Child Development, U. S. Department of Health, Education, and Welfare.

29-RB-1 RESPONSES TO YOUTH PROBLEMS AT A CRISIS CENTER: AN INVESTIGATION OF A SOCIAL EXPERIMENT

Investigator(s): Dennis Jaffe, Ted Clark, Donald Quinlan, and Solomon Cytrynbaum, Researchers, Number Nine, Inc., 266 State Street, New Haven, Connecticut 06511.
Purpose: To conduct an inquiry into the operation of Number Nine, Inc. (a youth crisis center directed and operated by young people as a laboratory to solve other young people's problems); to investigate what the project is doing, how it can be duplicated elsewhere, what changes in individuals and the community have resulted because of the project; and to determine the effectiveness of the project's services.
Subjects: Individuals involved in the Number Nine Project.
Methods: Data will be collected from comprehensive records: diaries and case studies from the staff; interviews with the staff and clients; verbatim transcripts of individual counseling sessions, group meetings, family counseling, and workshops; and comparative statistical data and analysis of youth services in the area.
Duration: August 1970-August 1971.
Cooperating group(s): Department of Psychology, Yale University; Connecticut State Government.
Publications: Rintenbeek, H. (Ed.) *Radical therapy*. New York: Bantam Books, Inc., 1971; An anthology of research conducted at Number Nine, Inc. will be published in 1972.

29-RB-2 THE EMERGENT CHARACTER OF CHILD CARE INSTITUTIONS

Investigator(s): Carole Joffe, M.A., Researcher, Center for the Study of Law and Society, Department of Sociology, University of California at Berkeley, Berkeley, California 94720.
Purpose: To study the impact of such variables as the current child care movement, parent participant thrust, and desegregation mandates on institutions for children; and to investigate the question of differential demands and expectations of children as they occur along racial lines.
Subjects: Two-parent-participatory nurseries (affiliated with the local school district) that enroll children, ages 3 to 4, from middle and low income groups.
Methods: Participant observation will be made in nursery school settings and through attending parent-staff meetings and teacher-administration meetings. Interviews will be conducted with parents, teachers, and administrators. Current funding legislation for preschool programs will be examined.
Duration: November 1971-December 1972.

29-RC-1 JACKSON COMPREHENSIVE HEALTH-EDUCATION PROJECT

Investigator(s): Robert G. Pishel, Jr., Ph.D., Consultant Psychologist, Department of Obstetrics and Gynecology, Medical Center, University of Mississippi, 2500 North State Street, Jackson, Mississippi 39216.
Purpose: To evaluate the effectiveness of a central agency that coordinates and provides medical, educational, and social counseling services for pregnant teen-agers in the Jackson Separate School District.

Subjects: 200 pregnant teen-agers, ages 12 to 20, from the Jackson Municipal Separate School District; and a control group.

Methods: The experimental groups will include pregnant teen-agers enrolled after the first 3 full months of program operation. The control group will include pregnant teen-agers who will not receive these services for as long under the program and during the first 3 months of its operation. A structured interview and questionnaire will be used to collect initial and follow-up data. Medical records will also be used in the evaluation. Chi-square analysis will be employed to determine the significance of findings.

Duration: 1971-1975.

Cooperating group(s): Research Utilization Project, Washington, D. C.

29-RD-1 LEGAL AND POLICY IMPEDIMENTS TO INTERSTATE ADOPTION

Investigator(s): Ann W. Shyne, Ph.D., Research Director; and Roberta Hunt, M.S.W., Project Director, Child Welfare League of America, Inc., 67 Irving Place, New York, New York 10003.

Purpose: To identify common obstacles to interstate adoption because of legal provisions or administrative policies, in order to direct efforts towards their modification.

Methods: An analysis of state laws and administrative manuals, a survey by questionnaire of problems adoptive agencies have encountered, and an examination of the experience of the Adoption Resource Exchange of North America will be made.

Duration: September 1971-June 1972

Cooperating group(s): Office of Child Development, U. S. Department of Health, Education, and Welfare.

29-RD-2 AGENCY REPSONSES TO COUPLES WISHING TO ADOPT TRANSRACIALLY

Investigator(s): Fredrick W. Seidl, Ph.D., Associate Professor, Waterloo Lutheran University, Waterloo, Ontario, Canada.

Purpose: To assess the attitudes of agency representatives towards white couples who want to adopt black or racially mixed children.

Subjects: 18 adoption agencies.

Methods: Each of the sample agencies was called twice by a client who inquired in the first call for either "a child" or a "black or racially mixed child," and in the second call for the kind of child not requested in the first call. Conversations were recorded and rated by three raters in terms of the degree of acceptance of the idea of the adoption shown by the adoption agency worker.

Findings: An analysis of variance indicated that agencies accepted more readily couples who wished to adopt transracially than couples who wished to adopt children of their own race. There was no rater effect or interaction.

Duration: June 1971-August 1971.

29-RE-1 RETURN HOME FROM FOSTER CARE

Investigator(s): Ann W. Shyne, Ph.D., Research Director; and Edmund Sherman, Ph.D., Research Associate, Child Welfare League of America, Inc., 67 Irving Place, New York, New York 10003.

Purpose: To test the relative effectiveness of certain strategies to prevent children's retention in temporary foster care longer than necessary or desirable.

Subjects: Approximately 450 children, under age 13, in foster care less than 3 years.

Methods: The study is divided into three parts: (1) a control segment; (2) the caseworker must submit a monitoring form (a quarterly report) on plans for the child; and (3) the monitoring form is effected, and special workers interact with the natural parents. Detailed baseline and outcome data are obtained from the caseworkers on all children in the three segments. Independent research interviews are conducted with the natural parents when a child returns home as a basis to assess whether this is in his interests. Rates of return home and of other permanent placement will be compared for the three segments. The segments will be compared with respect to the desirability of return home when this has occurred.

Duration: November 1970-October 1972.

Cooperating group(s): Community Services Administration, Social and Rehabilitation Service, U. S. Department of Health, Education, and Welfare; Rhode Island Department of Social and Rehabilitation Services, Child Welfare Service.

29-RE-2 FOSTER HOME CARE IN MASSACHUSETTS

Investigator(s): Alan R. Gruber, D.S.W., Director of Research and Evaluation, Boston Children's Service Association, 3 Walnut Street, Boston, Massachusetts 02108.

Purpose: To establish a profile of children in foster home care in Massachusetts; to identify their problems; to establish links between their natural parents and the supervising agencies; and to recommend appropriate changes in the foster home care service delivery system.

Subjects: All children, ages 0 to 21, in foster homes in Massachusetts under public or private auspices; a 5 percent random sample of foster parents; and a 5 percent random sample of natural parents.

Methods: Social workers will complete questionnaires on foster children in their caseloads. Interviews will be conducted with natural parents and foster parents. Statistical treatments of the data include multivariate analysis, chi-square, and correlation matrices.

Duration: November 1971-November 1972.

Cooperating group(s): Massachusetts Department of Public Welfare.

29-RF-1 EVALUATION OF PILOT PROGRAMS FOR CHILDREN

Investigator(s): Wilbert W. Lewis, Ed.D., Director; Linda McCormick, M.A.; and Patricia Self, Ph.D., Child and Youth Development Institute, 3420 Richards Street, Nashville, Tennessee 37215.

Purpose: To evaluate four community coordinated child care programs.

Subjects: Children served by day care and other preschool programs located in San Antonio, Texas; Edinburg, Texas; Winston-Salem, North Carolina; and Athens, Georgia.

Methods: Tracking systems are being developed to monitor contacts of children with day care programs and other services for preschool children in order to identify patterns of service utilization and the need for new service programs.
Duration: July 1971-June 1974.
Cooperating group(s): Office of Child Development, U. S. Department of Health, Education, and Welfare.

29-RF-2 CHILD CARE IN THE CITY OF EDMONTON

Investigator(s): J. K. Bishop, Ph.D., Associate Professor, Department of Educational Psychology, University of Alberta, Edmonton, Alberta, Canada
Purpose: To learn where parents place their children during the daytime from Monday to Friday when their children are not with them; to study the care environments in which the children are placed; and to prepare a guidebook for Edmonton parents on what to look for when placing children in a supplementary setting.
Subjects: 1,000 preschool children, ages 2 to 6, whose parents live in Edmonton.
Methods: Mothers who hold elected positions with their community play school are asked to interview five acquaintances whose preschool children are not enrolled in the play schools.
Findings: The primary reason mothers placed children with care agents was to allow them free time for shopping and volunteer work, but not for work. Mothers preferred educational settings for their children and wanted facilities with flexible attendance policies.
Duration: April 1971-April 1972.
Cooperating group(s): Province of Alberta, Preventive Social Service Act; Lady Aberdeen League of Edmonton.

29-RG-1 CHILDREN IN CRISIS

Investigator(s): Robert H. Joss, M.A., Research Associate, Division of Community Psychiatry, State University of New York at Buffalo, Buffalo, New York 14214; and Director of Evaluation, West Side Children's Services, 205 Maryland Street, Buffalo, New York 14201.
Purpose: To provide emergency child welfare services to children and their families; e.g., emergency homemaker parents, emergency foster parents, as well as professional staff services.
Subjects: Children and their parents, who live on the lower west side of Buffalo.
Methods: Data evaluation will be on a moderate scale and will emphasize practical rather than theoretical investigations. The geographic area served by the agency will be described in terms of the data available from the 1970 Census. Detailed information will be collected on all applicants for service, particularly the demographic, geographic, and symptomatic aspects of the clients. Data will be gathered on the reason for application for service and the route to application which the client takes. The service process will be studied and will include a measurement of the amount of service provided relative to the size of the population generating the client group, characteristics of the provided service, and characteristics of the project organization including its relationship to other community agencies. Service utilization and problem prevalence data will be compared for the defined population served by the project and for similar populations not served by the project. This data will be obtained

from 1970 Census figures, the records of the West Side Children's Services, and the available records from governmental agencies which receive reports of cases of child abuse and abandonment.
Duration: September 1971-August 1974.
Cooperating group(s): U. S. Department of Health, Education, and Welfare; Children's Aid, Erie County, New York; Society for the Prevention of Cruelty to Children, Erie County, New York.

29-RH-1 PARENTS' CENTER PROJECT FOR THE STUDY AND PREVENTION OF CHILD ABUSE

Investigator(s): Richard Galdston, M.D., Assistant Professor, Department of Psychiatry, Medical School, Harvard University, Cambridge, Massachusetts 02138; and Principal Investigator, Parents' Center Project, 320 Longwood Avenue, Boston, Massachusetts 02115.
Purpose: To study the causes of violence in the home and methods of preventing it.
Subjects: 30 families with a total of 50 children.
Methods: A combined day care nursery was established. Group centered treatment for parents is available that employs techniques derived from psychoanalytic principles.
Duration: September 1968-September 1972.
Cooperating group(s): W. T. Grant Foundation.
Publications: Violence begins at home. *Journal of the American Academy of Child Psychiatry*, April 1971, 10.

29-RJ-1 COMMUNITY ORIENTED CARE IN CHILDREN'S INSTITUTIONS

Investigator(s): George Thomas, Ph.D., Research Associate, Regional Institute of Social Welfare Research, 1260 South Lumpkin, Athens, Georgia 30601.
Purpose: To assess the degree of community oriented care and to initiate an experimental approach designed to move child care institutions towards community orientation.
Subjects: Approximately 1,800 dependent and disturbed children, ages 6 to 17, in residence at 37 child care institutions in Georgia.
Methods: In the first phase of the research, survey techniques will be used to build profiles of the current status of facilities, staff, programs, and policies for each institution. An adaptation of D. Pappenfort's Census of Children's Institutions Questionnaire will be used to obtain baseline data. The second phase of the project will be experimental, using control designs to test planned change strategies. Pre- and posttest measures of both institutional change and child change will be used. An adaptation of the Borgotta-Fanchel Child Behvaior Characteristics measure will be used to rate child adjustment and change.
Duration: August 1971-July 1974.
Cooperating group(s): Georgia State Department of Family and Children Services.

HEALTH SERVICES

29-SA-1 C.A.R.R.--CHILD ACCIDENT REGISTRY OF ROCHESTER

Investigator(s): James T. Heriot, Ph.D., Clinical and Research Director and Assistant Professor; and Stanford B. Friedman, M. D., Associate Professor, Department of Pediatrics, Psychodiagnostic Laboratory, Strong Memorial Hospital, 260 Crittenden Boulevard, Rochester, New York 14620.

Purpose: To study children admitted to all Rochester area hospital emergency rooms for repeated accidents.

Subjects: Approximately 150 to 200 children, ages 0 to 16, admitted to Rochester, New York area emergency rooms for all types of acute accidents.

Methods: The researchers obtained permission to use hospital emergency room records in June 1971. The data will be collected and computerized by field workers. Preliminary plans call for biweekly computerized sorts to identify child or family member who is readmitted to the emergency room for accidents. They will be assigned to intervention and control groups randomly and tracted by the Child Accident Registry of Rochester to determine the effects of the style of intervention.

Duration: 1971-continuing.

Cooperating group(s): Society for the Prevention of Cruelty to Children.

29-SA-2 MEDICAL CARE AND FOOD SUPPLEMENTATION UPON PHYSICAL GROWTH AND MENTAL DEVELOPMENT OF A COMMUNITY

Investigator(s): Hernan Velez, M.D., Head, Department of Biochemistry and Nutrition, School of Medicine, University of Antioquia, Apto Aereo 1226, Medellin, Colombia.

Purpose: To evaluate the effect of food supplementation and medical care on the growth and mental development of children.

Subjects: 1,200 boys and girls, ages 0 to 14, of the same race.

Methods: Two groups of children have been evaluated for physical growth and mental development using 60 different parameters for growth and six parameters for development.

Findings: Results indicate that medical care has more effect than food supplementation on growth and development.

Duration: 1967-1974.

29-SA-3 A STUDY OF PUBLIC COMMUNICATION CRITICAL TO CHILD HEALTH CARE

Investigator(s): C. W. Shilling, M.D., Director; David C. Weeks, Project Director; Hugh J. Parry, Ph.D.; and Robert Pulliam, M.A., Biological Sciences Communication Project, Social Research Group, Medical Center, George Washington University, 2001 S Street, N.W., Washington, D. C. 20009.

Purpose: To identify communications primarily concerned with the care of handicapped school children, and to study the effectiveness of an Office of Child Development (OCD) panel report to inform the public.
Subjects: Identification of the appropriate subjects is a part of the research task.
Methods: The study formulates a presumed model whose elements include (1) demography (identity of groups and persons), (2) issues (the perceptions of groups and persons concerned), and (3) channels (the communications that effectively form perception of issues). Two successive formal questionnaires will be used to modify and detail the model. The study seeks to identify the causes of public and professional opinion, rather than to measure opinion in static state. The use of stimulant drugs in the treatment of child hyperkinesis is taken as a specific case.
Findings: Results suggest that the OCD study effectively informed professionals in education and medicine, principally as a result of republication in professional news journals. Laymen are generally unaware of hyperkinesis as a syndrome, and when they are aware, they do not perceive drug therapy as an issue.
Duration: July 1971-March 1972.
Cooperating group(s): Social Research Group, George Washington University; Office of Child Development, U. S. Department of Health, Education, and Welfare.

29-SA-4 SALT FLUORIDATION STUDY IN FOUR COLOMBIAN COMMUNITIES

Investigator(s): Hernan Velez, M.D., Head; R. Mejia; and F. Espinal, Department of Biochemistry and Nutrition, School of Medicine, University of Antioquia, Apto Aereo 1226, Medellin, Colombia.
Purpose: To investigate the effects of water fluoridation programs on school children in four Colombian communities.
Subjects: School children in four Colombian communities.
Methods: Salt fluoridation was introduced in the water supplies of four different Colombian communities at different levels. Urine samples of school children were collected in each town and were analyzed for fluoride content.
Duration: April 1971-March 1972.
Cooperating group(s): National Institute of Dental Research, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-SB-1 ACNE EDUCATION PROGRAM--AN EVALUATION

Investigator(s): Arnold W. Gurevitch, M.D., Staff Physician; and Ronald M. Reisner, M.D., Chief, Division of Dermatology, Harbor General Hospital, Torrance, California 90509.
Purpose: To determine if a special lecture program on acne has long-term effects on the knowledge or attitudes of seventh and eighth graders.
Subjects: Approximately 7,000 boys and girls in grades 6 to 8, ages 13 to 15.
Methods: The students are given a pretest consisting of 10 multiple choice questions (3 choices) on the subject of acne. The test is administered by their teachers in a regular classroom situation. An illustrated slide lecture on acne is presented to the students. Two to 6 months following this lecture presentation, the test is administered again as a posttest. The data obtained from the tests will be evaluated in relation to changes in mean scores from the pre- to posttest and in relation to significant changes in response to individual questions.

Findings: Although the study has not been completed, preliminary observation indicates an increase of at least 10 percent in the mean score from the pretest to the posttest.
Duration: September 1970-June 1972.
Cooperating group(s): Bireley Foundation.

29-SD-1 LONGITUDINAL STUDY OF OUTCOME AND SURVIVAL OF A BIRTH COHORT

Investigator(s): Shanti Ghosh, M.D., Head, Department of Pediatrics, Safdarjang Hospital, New Delhi, 16, India.
Purpose: To assess prematurity criteria; to investigate the relationship of maternal, social, and environmental factors to the weight and growth of the baby; and to establish vital data for the subjects.
Subjects: 100,000 subjects of all socioeconomic groups.
Methods: Data will be gathered through documentation of family data; a follow-up of eligible women during pregnant and nonpregnant states every 2 months; and a follow-up of the baby at birth, at 1 month, and every 3 months thereafter. All proformae will be coded.
Duration: April 1969-March 1973.
Cooperating group(s): Indian Council of Medical Research; National Center for Health Statistics, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-SD-2 THE MYOCARDIAL CONDUCTION SYSTEM IN SUDDEN DEATH IN INFANCY

Investigator(s): Marie Valdes-Dapena, M.D., Professor of Pathology, School of Medicine, Temple University, Philadelphia, Pennsylvania 19122.
Purpose: To determine whether there are areas of degeneration, cell death, or replacement fibrosis in the atrioventricular node and bundle of His in infants dying suddenly and unexpectedly.
Subjects: 35 children, ages 1 month to 1 year, whose autopsies revealed crib deaths; and 20 control infants who died of recognized causes. (The sample is predominantly male.)
Methods: A block of tissue containing the atrioventricular node is embedded in paraffin, cut serially, and examined.
Findings: Study of the serial sections of 12 hearts from nine infants who died suddenly and three control infants has been completed. The only pathologic change observed was one microscopic angioma in one control. There was no cell degeneration, no cell death, no active phagocytosis, and no replacement fibrosis seen in any heart.
Duration: October 1969-April 1972.
Cooperating group(s): Office of the Medical Examiner, Philadelphia, Pennsylvania; National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-SD-3 PREDICTING AND ENHANCING COMPLIANCE IN A CHILDREN AND YOUTH PROJECT

Investigator(s): Marshall H. Becker, Ph.D., M.P.H., Assistant Professor; and Robert H. Drachman, M.D., Associate Professor, Department of Pediatrics and Maternal and Child Health, School of Medicine and School of Hygiene and Public Health, Johns Hopkins University, Johns Hopkins Hospital, Park Building B-172, 601 North Broadway, Baltimore, Maryland 21205.

Purpose: To identify characteristics and perceptions of mothers that are related to their compliance with a medical regimen prescribed for their children (including keeping follow-up appointments), and to make suggestions to modify these variables in order to enhance the likelihood of compliance.

Subjects: Mothers (or grandmothers, if guardians), ages 14 to 70, of a random sample of 150 inner city children, ages 6 weeks to 11 years, who receive ambulatory pediatric care in the Child Care Clinic at Johns Hopkins Hospital.

Methods: All children were selected because they had been placed on an oral antibiotic regimen. Data were gathered by an extensive interview-questionnaire. Most of the questions were designed to tap dimensions of a behavioral model that employed three psychological components within the mother: (1) health motivation (including perceived physical threat, interference with normal social roles of mother and child, and concern with physical well being), (2) perception of the child's vulnerability, and (3) incentive value of compliant action. Correlations and multiple regression analyses will be used to find the best predictors of compliance.

Findings: Results generally support the model. Variables found to predict compliance include: perceived credibility of diagnosis, belief in potential resusceptibility, perceived disruptiveness of illness, perceived barriers to keeping appointments, preventive orientation, delay, and the psychological costs and benefits of obtaining medical care.

Duration: July 1971-June 1972.

Cooperating group(s): National Center for Health Services Research and Development, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-SF-1 THE SCHOOL NURSE PRACTITIONER PROGRAM: A NEW AND EXPANDED ROLE FOR THE SCHOOL NURSE AND A NEW CONCEPT IN PROVIDING HEALTH CARE TO SCHOOL AGE CHILDREN

Investigator(s): Henry K. Silver, M.D., Professor, Department of Pediatrics, Medical Center, University of Colorado, 4200 East Ninth Avenue, Denver, Colorado 80220.

Purpose: To implement a new educational and training program in pediatric health care for professional nurses that prepares nurses with baccalaureate degrees to assume an expanded role in providing increased and improved health care to school age children.

Subjects: Participants in the school nurse practitioner program at the University of Colorado Medical Center.

Methods: In the first phase, the school nurses receive 4 months of intensive theory and practice in child care and school health under the direction of the faculties of the Medical Center and the Denver public schools. They participate in a variety of educational experiences: they learn improved interviewing techniques; become expert in performing the essentials of a physical examination; and learn about growth and development, nutritional needs, cultural, ethnic, and economic factors affecting health, and parent counseling. After training, the school nurse practitioners will practice in the schools and assume responsibility for identifying and managing many of the health problems of the children. After the nurse practitioners are established in the school setting they will participate in health projects concerning common conditions and problems of childhood. They will assist children to cope with special problems, and they will provide health care within the framework of the existing community resources.

Duration: 1965-completed.

Cooperating group(s): Schools of Medicine and Nursing, University of Colorado Medical Center; Denver public schools.

29-SF-2 FAMILY HEALTH CARE: A STUDY OF ITS MEANING IN PRACTICE

Investigator(s): William M. Schmidt, M.D., Head; and Helen D. Cohn, M.P.H., Lecturer, Department of Maternal and Child Health, School of Public Health, Harvard University, 55 Shattuck Street, Boston, Massachusetts 02115.

Purpose: To examine and describe the procedures of family health care or family centered care that characterize services to mothers and children in different types of comprehensive neighborhood health centers.

Subjects: 10 to 12 programs that serve the problems of people who live in poverty and who have special need.

Methods: The procedure followed in studying each center includes (1) a review of the original project plan in terms of the scope and organization of services; (2) a review of the records of 40 to 50 families, from which information is abstracted that relates to the sequence of the enrollment of family members; (3) interviews of approximately 1/2 to 1 hour with the medical director and some of the staff members; and (4) observation of selected activities, particularly the admission and enrollment of patients, case conferences, or team meetings and methods of exchanging family information among staff members.

Duration: July 1971-June 1972.

Cooperating group(s): Division of Research, Maternal and Child Health Service, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

29-SF-3 EVALUATION OF THE RESOURCES OF A PEDIATRIC OUTPATIENT DEPARTMENT

Investigator(s): Willis A. Wingert, M.D., Director, Pediatric Outpatient Department; David B. Friedman, M.D., Director, Pediatric Education; and Paul F. Wehrle, M.D., Chairman, Department of Pediatrics, Medical Center, University of Southern California, 1129 North State Street, Los Angeles, California 90033.

Purpose: To determine the effectiveness of indigenous health aides to survey and correct the health needs of families of chronically ill children; and to determine whether correction of health and social problems by aides and nurses influences the outcome of a chronic illness.

Subjects: 200 chronically ill children and their families selected randomly from specialty clinics in a pediatric outpatient department; 100 pregnant females, under 15 years of age; their families; and their offspring.

Methods: The sample is distributed randomly among six public health nurses and 12 indigenous minority group health aides who have been trained for a period of 2 months. Nurses and aides survey the health, social, and educational needs of the index patient and every member of his family, using standard references. The patient's problems are corrected as far as possible. Effectiveness is measured by the patient's compliance, by the outcome of the disease, and (for the pregnant teen-agers) by acceptance of birth control measures, return to school, and immunization of the offspring.

Findings: Two-thirds of all recruited aides were effective surveyors. The effectiveness of the aide matched that of the public health nurse except in the field of psychological problems. Eighty percent of the teen-agers returned to school. The rate of recidivism was less than 10 percent. The offspring, however, failed to develop normally in language at age 1.

Duration: 1965-1971.

Cooperating group(s): Children's Bureau, Office of Child Development, U. S. Department of Health, Education, and Welfare.

Publications: *American Journal of Public Health*, May 1968, 38; *American Journal of Public Health*, October 1970, 60; *California Medicine*, March 1969, 110; *Public Health Reports*, April 1969, 84; *Clinical Pediatrics*, November 1969.

29-SH-1 A COMPARISON OF METHODS OF TEACHING FIREARM AND HUNTING SAFETY IN SELECTED PENNSYLVANIA SCHOOLS

Investigator(s): Frank Anthony, Ph.D., Associate Professor, College of Agriculture, Agricultural Experiment Station, Pennsylvania State University, 101 Agricultural Education Building, University Park, Pennsylvania 16802.

Purpose: To determine the most effective method to teach hunting safety to junior high school students.

Subjects: Seventh and eighth grade students in two schools in each of five Pennsylvania counties.

Methods: Four methods of instruction were evaluated for their effectiveness to change the attitudes of beginning hunters. A pretest and a test of 50 statements that reflected the attitudes of the 10 commandments of safety were administered.

Findings: Photographic slides and prepared educational material were found to be most effective to change the students' attitudes. Girls have more to learn about hunter and firearm safety, and they are capable of learning when given the opportunity.

Duration: August 1964-June 1971.

Cooperating group(s): Pennsylvania Game Commission; Pennsylvania Rural Safety Council.

29-SH-2 CHRONIC TOXICITY OF LEAD INGESTED DURING CHILDHOOD

Investigator(s): Roy E. Albert, M.D., Professor, Institute of Environmental Medicine, Medical Center, New York University, 340 East 34th Street, New York, New York 10016.

Purpose: To determine if deleterious health effects exist in children who are exposed to lead in low to moderate degree.

Subjects: Approximately 2,000 children, ages 5 to 14, primarily from ghetto areas (55 percent black; 35 percent Puerto Rican), who have case records in the New York City Lead Registry from 1959 to 1968; their siblings; and a group of children from dental clinics.

Methods: Lead concentration in deciduous teeth is used to define the cumulative lead exposure. The parents are interviewed on their child's health history, development and problem behaviors, and family social, economic, and health factors. A medical verification will be made of the child's illnesses and his school records. A subsample is given a comprehensive physical, neurological, and psychological examination.

Findings: About 10 percent of the inner city children without known acute lead episodes appear to have had lead overexposure. No general deleterious health effects of lead have been found, although lead may serve to compound other risk factors such as birth problems. The partial clinical data suggest that psychometric variables may be the most sensitive indicators of minimal cerebral dysfunction associated with lead.

Duration: 1968-continuing.

Cooperating group(s): Food and Drug Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

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Abstracts of Hospital Management Studies (quarterly), the Cooperative Information Center of Hospital Management Studies, University of Michigan, 220 East Huron Street, 419 City Center Building, Ann Arbor, Michigan 48108.

Abstracts on Criminology and Penology, Criminologica Foundation, Rapenburg 38, Leiden, The Netherlands.

Communication Disorders, Information Center for Hearing, Speech, and Disorders of Human Communication, The Johns Hopkins Medical Institutions, 310 Harriet Lane Home, Baltimore, Maryland 21205.

Current Index to Journals in Education (monthly), CCM Information Corporation, 909 Third Avenue, New York, New York 10020.

Dissertation Abstracts, University Microfilms, Ann Arbor, Michigan 48103. (Gives synopses of U.S. doctoral dissertations with an annual index.)

dsh Abstracts, Deafness, Speech and Hearing Publications, Gallaudet College, Washington, D.C. 20002.

Exceptional Child Education Abstracts (quarterly), The Council for Exceptional Children, Box 6034, Mid City Station, Washington, D.C. 20005.

Health Economic Studies Information Exchange, Division of Medical Care Administration, Public Health Service, Washington, D.C. 20402.

Index Medicus, National Institutes of Health. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Language and Language Behavior Abstracts (quarterly), Center for Research on Language and Language Behavior, University of Michigan, Ann Arbor, Michigan 48104. Order from Subscription Manager, LLBA, Meredith Publishing Co., 440 Park Avenue South, New York, New York 10016.

Mental Retardation Abstracts, Division of Mental Retardation, Social and Rehabilitation Service, 330 Independence Avenue, S.W., Washington, D.C. 20201. Concerning abstracts write to Lemar J. Clevenger, Project Administrator, MRA, American Association of Mental Deficiency, 1601 West Broad Street, Columbus, Ohio 43223 or Miss Patricia Thuben, Project Officer, Division of Mental Retardation, Rehabilitation Services Administration, Social and Rehabilitation Service, Washington, D.C. 20201.

Nutrition Abstracts and Reviews, Commonwealth Bureau of Animal Nutrition, Bucksburn, Aberdeen AB2 9SB, Scotland.

Poverty and Human Resources Abstracts (bimonthly), Institute of Labor and Industrial Relations, University of Michigan-Wayne State University, P.O. Box 1567, Ann Arbor, Michigan 48106.

Psychological Abstracts, American Psychological Association, 1333 - 16th Street, N.W., Washington, D.C. 20036.

Rehabilitation Literature, National Easter Seal Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago, Illinois 60612.

Research in Education (monthly), Leasco Systems and Research Corporation, 4833 Rugby Avenue, Bethesda, Maryland 20014.

Sociological Abstracts, 15 East 31st Street, New York, New York 10016.

The Educational Resources Information Center (formerly the Educational Research Information Center), better known as ERIC, supplies current research and research-related information to teachers, administrators, researchers, commercial organizations, and others. ERIC includes 20 clearinghouses, or documentation centers, located at universities and other institutions throughout the country. Each clearinghouse concentrates on a different subject matter area in the field of education. For complete information, write: Director of ERIC, Office of Education, U.S. Department of Health, Education, and Welfare, Washington, D.C. 20202.

The Excerpta Medica Foundation, New York Academy of Medicine Building, 2 East 103rd Street, New York, New York 10029, and 119-123 Herengracht, Amsterdam C, The Netherlands has established an abstracting service on pediatrics, available on a yearly subscription basis. In addition to abstracts, the Foundation provides to subscribers, at cost, photocopies and translations of complete articles.

The Minnesota Family Study Center supplies to interested scholars bibliographic information from the Inventory of Published Research in Marriage and Family Behavior. Address requests to: Director, Inventory of Published Research in Marriage and Family Behavior, Social Science Tower 1026, University of Minnesota, Minneapolis, Minnesota 55455.

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The Library of the National Bureau for Child Welfare (Voor Kinderbescherming), Stadhouderslaan 150, The Hague, The Netherlands publishes abstracts of articles in the field of child welfare each month. These are in Dutch, but those familiar with the Universal Decimal System would be able to understand something about the articles. The subscription rate for documentation on cards is 30 guilders (approximately $8.40).

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METHODS: (Please discuss research design: control groups, methods of data collection, research instruments, unique features of research, statistical treatment.)

FINDINGS TO DATE:

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PRINCIPAL INVESTIGATOR(S):

DEGREE:

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Bibliography on the Battered Child, revised July 1969. Copies free from the Children's Bureau, Office of Child Development, U.S. Department of Health, Education, and Welfare, Washington, D.C. 20201.

Research Relating to Emotionally Disturbed Children, 1968. A listing of studies reported to the Clearinghouse between 1956 and 1967, including publication references. Single copies free from the Children's Bureau; also available *directly* from the Government Printing Office, Washington, D.C. 20402, for $1.00. Do *not* send money to the Children's Bureau.

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